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International Journal of American Linguistics

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SIGN LANGUAGE INQUIRY

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0. The Indian sign language of the Great Plains and surrounding regions attracted much interest in the nineteenth century but has been thoroughly neglected in the twentieth by both linguists and anthropologists.

D. G. Mallery's monograph appeared in 1881 in the first Report of the Bureau of Ethnology as a study of nearly 300 pages. Wm. Philo Clark's *Sign Language* appeared posthumously in 1885, was unillustrated and has become rather a rare book. Lewis F. Hadley, a missionary, produced *Indian Sign Talk* in 1893, which I have not seen.

The present century added a nonscholarly but extraordinarily useful pamphlet, called *Universal Indian Sign Language*, sold primarily to Boy Scouts, published in San Diego by the author, William Tomkins—the fourth edition is copyright as of 1929. I am told it is still to be had from the Fred Harvey Co. affiliated with the Santa Fe Railway in Albuquerque. It is compendious, concise, contains over 400 line drawings, and being written for schoolboys is simple and clear and avoids speculations in favor of information. It contains some loose generalizations of a popular sort, a few transparent errors, but as an introduction I have found it effective and more useful than any of the earlier and more pretentious but less complete books. I have met Mr. Tomkins, presented him before my department of the University, and have every confidence in his integrity and substantial accuracy. His work seems centered on the Western Dakota.

Fearing the sign language might be becoming or even have become moribund, I urged for some years that a field study be undertaken before too late. Carl Voegelin responded most coöperatively and arranged for his student La Mont West to visit Plains reservations in the fall of 1956. West found the system still practiced, in fact in rather wide use on ceremonious intertribal occasions, perhaps as a more appropriate and exhibition-like or entertaining medium of communication than English. The chief modernism was that the executants now duplicate their sign communication by simultaneously speaking the corresponding words. If anything, the sign language seems to have spread, and West

found regional variation to be considerable. He secured film records, and plans to continue field study and write a dissertation on the subject.

Encouraged by this favorable situation, Voegelin and I applied to the American Philosophical Society for a grant to aid first-stage research, for receipt of which we are grateful. It will enable West to continue intensive inquiries during the summer of 1957 with a selected informant, and for both of them to meet with us for review and appraisal in the fall.

The present paper is intended to provide for a twentieth-century pick-up of a topic which nineteenth-century students dropped when they no longer knew how to carry it farther, and which for over sixty years has lain neglected.

Mallery and Clark had much and valuable information on the sign language—much more than I possess. But they were army officers, as Hadley was a missionary, and they did not really know how to make an intensive scholarly analysis of an unusual and novel system. Nor could Major Powell and his associates at the Bureau of Ethnology show them, except with examples of broad speculation. They knew about collecting data—Mallery published a somewhat discursive corpus of fifty pages (479–528) of sign language texts, though another fifty pages (409–459) of illustrative "Extracts from the Dictionary" concern only some twenty sets of meanings. He sensed the value of comparisons, but discriminated less as to their relevance. Mallery's knowledge was abundant and of good quality, his interest was intense, but his day scarcely permitted him to weld his data into a systematized, configurated description: he ran off into free associations instead of persisting in analysis.

Nor am I ready to supply a description—a job of some years. But I hope to outline some twentieth-century perceptions which may prove fruitful and to suggest leads which when developed may contribute to a modern understanding of what the nature of this interesting sign system was.

1.1. The literature is not too explicit on free choice between executing gestures with one or two hands. In a formal situation, such as was probably usual, both hands would be free. Yet there is a considerable group of gestures described or pictured as if they were typically executed with one hand only, and another group in which both hands execute the same gesture simultaneously and abreast, like a team of horses. The one-hand signs mostly express single bodily acts, or characteristic animal motions—in general, the momentary; also, they express such approximations to renderings of grammar as sign language expresses. The two-hand or double gestures more often represent plural or iterated acts; in short, the durative as against the punctual, with the doubling giving quantitative reenforcement to the idea, as it were.

However, further study should concern itself with specific inquiry into how far the two classes are really separate, conventionally and mandatorily, or how far it is a matter of convenience or circumstance (or accident of description) to vary between use of one or two hands. While sign language may have been mostly employed on formal and ceremonious occasions, it may also have had some use in situations such as riding, hunting, scouting, where two hands were not free.

These are instances from Tomkins of two hands being used as a team; none are static: *attack* (*charge*), *advance*, *withdraw* (*afraid*), *throw away* (*abandon*), *push* (*try*, *effort*, *must*, *begin*), *seize*, *swim*, *dig*, *bet*, *dance*, *gallop*; *sick*, *palsied*, *cold* (*winter*), *hot*, *tired*, *heavy*, *light*; *bless*, *pity*, *thanks*, *quiet down* (*calm yourself*); *cloud*, *rain*, *snow*, *wind*; *people*, *bird*, *grass*, *coat*.

In *trade* (*exchange*), *blanket*, *ashamed* (*bashful*) the hands move identically but in

opposite direction, crossing. This subgroup may fit in better elsewhere than in the present class of hands paired.

Free single-hand gestures include some few static positions: *I*, *man*, *short*, *stand*.

The single-hand "grammaticals" are: *all* (including plurals of nouns and pronouns), *I* (*me*), *you*, *possession* (for possessive pronouns, also for *have*, *own*, *belong*), *now*, *yes*, *no*, (*not*) and "*question*." This last both signalizes an utterance as interrogative and expresses *what*, *who*, *which*, *why* (slow turns), and, in compounds, *where*, *when*. The interrogative must stand first in its sentence for obvious reasons.

The following are one-hand movements: *live* (*alive*), *rise* (*arise*), *recover health* (same as last, but palm under), *bring*, *go* (*depart*), *come*, *give*, *give me*, *distribute gifts*, *take*, *shoot*, *kill*, *see*, *jump*, *fall*, *twinkle*, *lightning*, *rattle*, *wait*, *stand*, *sit*.

Defy, with tip of thumb protruding between index and middle finger, is a Mediterranean and Mediaeval gesture, and was probably borrowed by Indians from whites. It is further out of step by presumably being an "interjection," an expression of emotion to the listener, of which the Plains sign language seems very chary, tending to restrict itself to conveying information.

Alone, *another*, *by itself* (*free* [standing]); *near* (*close*), *far* (*distant*), *up*; *man*, *chief* ("rising above"?), *friend* (brothers grow up); *dog*, *wolf*, *fish*, *snake*, *frog* (= *jump*); *sun*, *moon*, *river*, *rapids*, *bluff* (*butte*), *mountain*, *peak*, *tree*; *wheel* (*wagon*).

It will be seen that one-hand free gestures are more numerous than the two-identical-hand ones, and evidently they are used more frequently and importantly in connected discourse.

1.2.1. Two hands used, but stationary: *Astride* (*ride*, *horse*), *baby* (in arms), *beside* (*with*, *together*, *unite*), *hang*, *house*, *marry*, *opposite*, *prisoner* (bound wrists), *saddle*, *tepee*.

1.2.2. Two-hand signs, only one hand moves: *Above*, *across*, *after* (*future*, *behind*), *among*, *arrive here*, *arrive there*, *beaver*, *before* (past), *below*, *brave* (standing fast?), *brother-in-law* (meaning?—but sister-in-law is *brother possess wife!*), *cannot* (*impossible*, not penetrate, bounce back), *canyon* (*gap*, *defile*, *gorge:* "two sides, pass between"), *color* (finger tips rubbed around on back of hand—contrast with "Indian," rubbing with inner surface of fingers), *cut up meat* (slicing), *dismount* (*alight*), *dive* (under surface), *dull* ("cut not"), *end* (*done*, *cut off*), *exterminate* (*wipe out:* wipe off palm); *falls* in stream, *few* ("compressed"), *hard* (*stone*, *metal*, fist against palm), *high*, *how much* (*how many* = *question* plus index knocking down successive fingers), Indian (= "like myself in color"?—ct. *color*), *inferior*, *superior* (in rank or station; same sign for the two, except R index indicates person referred to; *meat* (L hand slices R), *middle* (R index tip points to L index knuckle), *overtake* (R index forward against L hand), *poor* (in goods: R index tip scrapes L), *powder* (bunched R tips circled just above L palm), *rope* (R index behind L in line, withdrawn spirally), *rose* (R tips pluck at L bunched ends), *run into* (R back hand against L palm); *sew* (R index pushed like awl over L thumb, twisting), *sharp* (L [!] thumb touched lightly against edge of R palm, which evidently represents knife edge), *steal* (R curved hand passed under flat L, then withdrawn while index crooked), *strike with weapon* (count coup?—R hand edge strikes L palm), *thick* (meat, slice: L palm grasped between R thumb and fingers, felt), *tobacco* (R closed hand rubbed around on L palm—obviously to indicate grinding of leaves).

1.2.3. Two-hand signs, both moving:

1.2.3.1. Interacting or crossing: *all gone* (vertical hands wiped up and down, R back against L palm side), *blanket* (*robe*—closed hands cross in front of chest, as if drawing robe around shoulders), *color spotted*, *pinto*, "*off*" (L and R backs of hands rubbed),

hold (in, keep out, contain?—fingers overlap to cover interstices, slide gently back and forth); *meet* (raised indexes, downwards, meeting at tips), *mingle* (nearly flat hands lightly touching, moved edgewise in small circles), *miss* (erect indexes pass each other), *mud* (each hand alternately clasps other, dragged off its fingers, "hoof extraction"), *night* (hands out level, R moves over L, L under, "covering"), *quarrel* (indexes erect, both thrown forward and back briskly by wrist flips); *sign language* (hand backs alternately touched by finger tips of other), *tangle* (fingers spread, point past each other, hands revolve vertically), *trot* (with fists, alternately), *walk* (person: flat hands forward alternately; animal, fists), *war*, *fight* (fists in front, alternately forward and back), *work* (flat hands facing, R higher, behind, both moved up and down, as if chopping; nature of specific work not clear).

1.2.3.2. Bilaterally Symmetric Simultaneous Motion:

1.2.3.2.1. Centrifugal: *break* (fists as if holding a stick, twisted apart, breaking upward); *clouds* (open hands over head, brought down to side; *gloomy* = *clouds* plus *close*, centripetal), *large*, *increase* (vertical parallel hands spread apart with little stops), *land* (flat hands down, then spread apart); *mound* (curved level hands up, side by side, spread downward, palms face), *prairie* (flat hands touch, palms up, spread), *soldier* (fists side by side, spread horizontally; origin not clear).

1.2.3.2.2. Centripetal: *heap up* (vertical hands approach, rise, touch), *many*, *much* (open hands vertical, apart, dropped and then approached upward), *surround* (spread thumbs and indices brought together).

1.3. Some 90 of Tomkins' signs involve some other part of the body in addition to the hand or hands. Contrariwise, there are no signs recorded as made only with parts of the body other than the hands, such as the legs, feet, or head. *Yes* is said to express nodding or "bowing the head," but it is the hand with raised index that actually is inclined forward. This suggests the strength of the channeling of the system; which is further confirmed by the sign for *sign language*: touching the forepart of the back of each *hand* with the finger tips of the other. Leg motions like walking, running, stepping, dancing, and presumably kicking are represented wholly by hand gestures. Sleeping is basically indicated by a motion of the flat hands into a tandem position; "then incline the head to the right," *as if* to lay it on the pillowing hands. A token inclination would suffice, and was probably the elegant execution; and the illustration shows the head not actually laid on the hands. Most utilization of the head or its parts is without or in very light contact; approach or proximity to eye, ear, mouth, nose, hair, etc. seems to have been favored over touching these. The system of communication might well be called a hand language.

The forearm must perhaps be included with the hands, because the height of the hands above the ground or body is often part of the gesture symbol. But there are remarkably few full-arm movements, either straight or circular; they were obviously avoided if possible. When there is such, the movement is always accompanied by a finger-hand gesture. Thus *sun* is primarily indicated by the near-circle of index-thumb; but as this appears also in *star*, *coin* ("*money*"), *medal*, *watch*, it is specified as *sun* by addition of a semicircular swing of the arm: the little circle of thumb and index is moved over the head from level to level, preferably from east to west. The sign for *another* is badly drawn in Tomkins and looks like an arm swing; but the text is much more modest: right hand over left breast, sweep it up and out toward right, ending with palm up. *Warbonnet* and *tail* involve bringing a hand to the hip or buttocks, but this is merely indicative of the relevant part of the body.

Herewith are listed the Tomkins occurrences of body-part inclusions in signs.

Body, trunk, or **torso:** *Sick*, *ache*, *lean*

(*skinny*, "*poor*"), *hungry*, *laugh*, *fond* (*love*, *hug*); *I* (*me*), *give me*; *another*, [situated] *by itself* (*solitary*, *only*, *free* [standing?]); *arrive here*, *close* (*near*); *push* [centrifugal]; *mother*, *father* [these are similar taps—"or pluckings" for *mother*—to the left breast, for *father* to the right, and the latter adds the determinative for *man*, which would hardly be needed if the two signs did not unduly resemble each other]; *half breed*; *coat*; *jealous*.

Heart, mainly in metaphors: *heart* (the organ), *good* ("heart level"), *know* (*understand*), *think* ("heart drawn-from"), *remember* (*memory*, "heart know"); *annoy* ("heart flutter").

Head: chiefly for horned or long-eared animals, about half of the signs static: *antelope*, *buffalo*, *deer*, *goat* (these static), *elk*, *mule*, *mountain sheep* (moving)—these usually call for paired hands; *hot* ("rays pressing down"); *sleep*.

Hair: *woman* (*girl*, *female*: "combing"—sideways from sagittal parting of hair); *Crow Indian*, *Osage* (typical hair-cut); *otter* (fur used for tying or wrapping hair at sides); *mourn* ("cut hair" plus "tears"). The way in which the concrete object is used to express quite diverse concepts is interesting and typical.

Forehead: *hat*, *white man* ("cap visor"); *angry* ("mind twist"), *crazy* ("mind whirl"), *sacred* (*holy*, *medicine*, "unknown, mysterious"). These signs evidently indicate the forehead for the brain, and this organ as the seat of feelings, which so far as known is not an aboriginal conception, whereas in modern Western civilization the brain is regularly the seat of the mind. It is possible that these signs were originally made at the heart and then altered to conform to White conceptions.

Face: *face*, *ugly* ("face bad"), *beautiful* ("face good"), *paint face*, *ashamed* (*bashful*, "cover face").

Eye: *eye*, *see* (*look*), *blind* ("see not"), *tears* (*cry*, *weep*, *mourn*), *owl*, (big round eyes).

Ear: *hear*, *listen*, *deaf*; *bear* (large ears; clawing); *mule* (see **head** group); *forever* (flat hand back and forth over ear; significance unclear).

Nose: (*wild*) cat (snub nose); *Nez Percé tribe*; *smell*, *fragrant* ("smell good"); *blood* (the sign is for nose bleed).

Mouth enters into many signs: *name* (*called*, *speak*, *talk*—index snapped out); *orate* (*confer*, *explain*—hand forward from mouth); *tell me* (motion reversed); *true* (*honest*, "one talk"), *untrue* (*lie*, "double talk"), *abuse* (*defame*, "double talk" moving from mouth); *sing* (2 fingers before mouth whirled; Tomkins says the whirl means *all*, but this seems doubtful); *silent* (finger tips over lips); *joke* (hand before mouth moved up; connection not clear; possibly the hand is jumped up. Tomkins: "recognized, not in general use"); *taste* (finger tip to tongue tip), *sweet* ("taste good"), *sour* ("taste bad"); *eat*, *drink* ("from curved hand"); *want* (Tomkins: "give me." The motion shown looks very much like bringing a bottle to the mouth—i.e., "give me whisky"); *astonish* (*surprise*, no doubt also emotional shock, embarrassment—the well-known Indian gesture of hand over mouth. Tomkins says this is the left hand, which probably holds only if the optional accompanying gesture of protest or *halt* is made with the right); *brother* (two finger tips to lips, moved out; meaning not clear; "speaking alike"?); *sister* (Tomkins: *woman* followed by *brother*, whereas the *brother* sign is followed by *man*!).

Cheek: *red* (rub cheek).

Chin, throat: *beard*, *goat* (*horns* followed by *beard*), *eaten enough* (*eat* plus index raised across throat), *Sioux* ("cut throat").

Eyebrow: *tweezers* (pluck brow).

Arm: the lower arm serves as a surface on which to repeat slight motions several times: *spotted*, *striped*, *tattooed* (appropriate movements three or four times toward hand); *often* (*many times*—little jumps, but upward from wrist; *strike match* (one distal movement).

Legs: legs are touched for *leggings* and *moccasin*.

Shoulder: *carry* (hold sack by two hands over one shoulder), *lead* (horse) by rope, *blanket* (draw around shoulders).

Back: in *warbonnet* and *tail*.

2. One way of classifying signs is by assembling all those that contain a common element, such as a fist in motion, a flat hand with palm up, a raised index, signs consisting of three or four identical steps or progresses, and so on. It is then possible to see how the associations of such an element vary, what it is that distinguishes the several "derivatives" from the common "radical," whether the radical carries a common meaning over into the "derivative" compounds or not, and in general to learn more about the principles on which the sign language was built up and that are significant or not in guiding the execution of signs today.

I present two such assemblages: first, all the examples I found of a very simple element, namely the horizontally extended or pointing index; second, a figure rather than a gesture, a near-circle made by touching or almost touching the thumb and index tips of both hands.

2.1. Gestures beginning with index extended horizontally:

2.1.1. One-handed, or two hands alike:

Cartridge. No motion; thumb held close to index, simulating the cartridge in the barrel.

Alone. Index moves forward (out) sinuously. The symbolism is not clear.

True, honest: "single tongue." Index before mouth, out.

Bring. Forearm level, forward; then hand brought back in toward body, index changing from straight to curved.

Take. The verbal description seems identical with bring, but the diagram emphasizes the reach or thrust forward and reduces the back-in motion. This may be intentional or merely an accidental variation of the draftsman. It is the sort of point that may be theoretically important, but can be cleared up only by renewed observation.

Afraid, shrink from. Extended hand and index are drawn back while index is curved. Can be made simultaneously by parallel hands.

2.1.2. Two Hands Interacting:

Marry. No motion; 2 indexes held side by side. Tomkins makes this a specifying qualifier of *trade* (presumably on account of wife purchase), viz. the second member of a compound.

Opposite. No motion; 2 indexes pointing at each other.

Unite, together, with, beside, by. No motion; R index along L palm.

Equal, same. Indexes parallel, near, moved forward equally (Tomkins: "meaning, even race").

After, future, behind, by-and-by. R index moves about a finger-length beyond L.

Before, past. Starts the same; motion reverse, R index drawn back.

Time. Tomkins speaks of "diversity of gesture . . . , but we present the most logical. For abstract TIME . . ." His drawing shows only the starting position of AFTER and BEFORE, as if without motion; but his description says: "pull right hand about three inches backward;" which makes it identical with BEFORE. I doubt whether in pre-white days there was a sign for abstract time; most native languages had no abstract noun for it, though they did of course have various temporal adverbs.

Die. R index moves forward under edge of vertical L palm.

Rash. L hand covers eyes, R index moves out. The two hands probably move more or less *simultaneously*, which would make a different type of compound from successive movements.

2.2. There are at least nine compound signs that include the element of a horizontal circle (or rhombus) made by two thumbs and two indexes. The full compound gestures

illustrate the principle of the same "radical" elements occurring in different context (and meaning); also the different place in the sequence of elements the same radical can take; and the general plasticity of compound formation. Most of the nine gestures denote definite and concrete objects, but one or two are abstractions (hole, center), and one or probably two are verbs when spoken.

The circle unit takes two forms: a complete circle with finger ends touching (4 cases), and an incomplete circle with the tips about an inch apart (5 cases). It is not clear whether the difference is intentional and significant or an accidental by-product of different manipulative sequences.

The following is an analytic comparison of the nine signs.

2.2.1. Circle the only element, but two steps to complete it: *Surround*. 1, circle widely incomplete, several inches of gap between hands. 2, bring index and thumbs together.

2.2.2. Circle the first element of two or more:

Center. 1, form complete circle. 2, leaving L fingers in position, move R hand away and above, point down with index to center of where circle was.

Hole. 1, form incomplete circle. 2, leaving L fingers, move R away and above, point down with compressed fingers into center of (former) circle.—This sign is identical with preceding, except that the pointing is with 4 fingers instead of index—a hole is less localized, less pin-pointed, than the center of something.

Island. 1, form incomplete circle. 2, holding this with L, with right make sign for *water* (cupped hand before mouth). 3, with compressed R fingers execute counterclockwise circling outside original circle.

Kettle. 1, form incomplete circle. 2, holding this with L, bring R finger tips over to L index point, then carry in an overhead arc to L thumb point, the motion indicating the handle or bail of the kettle. 3, insert R 4 fingers under this arc as if lifting it. This last seems a reinforcing determinative, making sure that unit 2 is understood.

2.2.3. Another radical first, circle second, explicative third:

Camp. 1, sign for *tepee*, 2 indices at 45°, touch. 2, form incomplete circle. 3, lower both hands and circle. The last element is not explained, and no sign is given by Tomkins for *set* or *put*. The total caption is merely "camp." I conjecture that he means the Plains camp circle, and that the sequence of elements is: *tepee, in-circle, set*.

Flower. 1, sign for *grass* (hands hang full length, palms up, swung apart), but made at waist height. 2, make complete circle. 3, swing hands so wrists approach, thumb points maintain contact, indexes spread and rise, little finger knuckles touch.—The meaning is not clear, except that initial *grass* introduces vegetation, the circle may suggest a bud, the final element the rise and spread of petals.

Lake. 1, sign for *water*, cupped hand. 2, make incomplete circle. 3, holding thumb points in contact, pivot hands apart till indexes are spread away from each other, but wrists together. This last seems an awkward manipulation to make and its meaning is not clear.

Spring of water. 1, sign for *water*. 2, complete circle. 3, holding circle with L, bring R hand below, with fingers folded down. 4, snap R fingers upward twice (*bubbling*). Element 3 serves to put the R hand in position to achieve 4 effectively.

The last four signs nicely illustrate the typical method of building up compound signs. The first element tells what the sign will be about, the general area in which it lies: houses, vegetation, or water. Then comes the rhombus-circle to indicate that something round or enclosed is involved. Third is the specific determinative or explicative which gives to the compound its particular meaning.

In the four signs in which the rhombus-

circle element comes first, the context orientation given thereby seems to be that of a round periphery or enclosure, within which something more specific is to be defined by a second or two more elements: the middle point, the hollow, the surrounding water, the handle to lift by.

In *surround* there is really only one sign but that dynamic, expressed by an initial and a completed stage. It is this completed stage that is used statically in the eight other occurrences of the rhombus-circle. *Surround* is the only sign that denotes an action. Several other such action signs—verbs in speech—are like *surround* in that the hand positions remain alike from beginning to end, though the meaning is achieved by motion of the hand or hands: *sit, race, push-try-begin, come, go-depart, give, talk-explain, bet, whip*. But *surround* alone results in a shape being achieved by the motion, which makes it useful as a static element in compounds. *Sit* achieves a position, which might also be useful in compounds (cf. the possible *set* in *camp*); but I am not clear how widely it is so used. *Race* can achieve relative position, and is in fact the basis of a series of metaphorical signs: on the one hand *equal-alike*, on the other, *behind-after-future-soon* and *ahead-before-past-long ago* and allegedly a nonpositional abstract *time*.

3.1. In signs compounded of two or more signs, that one which denotes a concrete object usually comes first, specifiers and qualifiers follow.

In practice, this means that the element which in speech translates into a noun mostly is first, and that verbs, participles, adjectives, and adverbs follow.

Noun plus qualifier: *alike:* face same; *ambitious:* person push(ing); *angry:* brain twisted; *annoyed:* heart flutter; *autumn:* tree leaf fall; *bachelor:* man marry not; *bald:* hair wiped-out; *brave:* heart strong; *bury:* blanket wrap dig; *cannon:* gun large; *cavalry:* white soldier riding; *cigarette:* tobacco rolled small; *city:* house many; *coal:* stone burn good; *coyote:* wolf small; *crazy:* brain whirl; *dam:* river hold; *dangerous, sulky:* heart bad; *disgust:* heart tired; *divorce:* woman throw-away; *drown:* water river (or lake) die; *fog:* water see-poorly; *give name to:* name give; *good:* heart level; *grandfather:* father hard-of-hearing (= old, otherwise signed by staff); and so on.

It will be seen that the compound sign as a whole, when translated into speech, may be any part of speech: noun, verb, adjective.

The initial "noun" sign may be qualified by the "verb" sign that follows, as in *heart* flutter > annoy(ed), hair wiped-out > bald, robe black > priest; or it may specify the place, manner, or instrument of the "verb" element that follows, as in [with, in, by means of] *blanket wrap dig* > *bury*, *water river die* > *drown*; or it may be the object of the "verb" element, as in *river hold* > *dam*, *woman throw-away* > *divorce*, *name give* > *give name to*, *blanket food distribute* > *annuity gifts*.

There are cases of the "noun" object element following the verbal component, as in *steal woman* > *elope*, *give lie* > *deceive*, *white chief give food* > (governmental) *agent*; but these require checking with native informants, just because their order is that of English speech.

Formally of course the sign-language as such has no way of marking "classes of words" or "parts of speech" as such. My "verb" element or "noun" component merely denotes the element which in translation into spoken communication would be rendered by a verb or noun.

When it is a matter of two noun-like elements, the qualifying or determining one comes first, as in English: *tree leaves*, *white-man chief*, *father*('s) *sister*, but *brother own wife* > *sister-in-law*, *white-man soldier house* > *fort*. There are seeming exceptions, as for *milky way* = *die road sweep-of-sky*, in which "die" may be *ghosts* or the *dead*; and *steamboat* = *boat fire*, but "fire" is the same

as "burn," so that if we render *boat burn(ing)*, we have the usual order of "noun"-"verb."[1]

In spite of there being no formal distinction of noun and verb in sign language, there is a degree of justification for considering to which class a meaning would be attributed in spoken speech, because presumably the sign language is secondary to speech, is a special surrogate for it, and may therefore have been influenced by it in such matter as order of elements in compounds.

Siouan, Kiowa, Athabascan, and Muskogian compound nouns by having the qualifying or determining noun precede, the verb or adjective follow the noun element; which is also the apparent sign language order. In Algonkin, Uto-Aztecan, Kootenay compound nouns, the qualifier precedes, irrespective of whether it is noun, verb, or adjective, as in most Indo-European languages (Romance and Keltic are exceptions).[2]

About half of the nineteenth-century Plains-culture Indians spoke Siouan languages, about one quarter Algonkin, then followed Caddoan, Uto-Aztecan, Kiowa, Athabascan. The suggestion is that the Siouan compositional order of elements was adopted for sign language compounds.

Two special classes of components take final position in compounds. One is the negative: *long* (time) *rain not = drouth; sit not = absent; man marry not = bachelor; look much sleep not = vigilant; stone not = soft.* This is also the position of the negative in sentences.

The other class is less certain, and is uncorroborated by utterance position. It consists of prepositional elements, which in many American languages are expressed by suffixes. I find the following instances: *work with = help, aid; go fight with = allied, allies, "alliance;" level river across = bridge* (I translate as "level;" the description is a static "prairie."). This class needs verification. *Across* is also *to cross*; *with* is also translated as *joined, unite, and.*

3.2. It is probable that clarity is most easily achieved through signs by beginning with readily identifiable gestures and then adding specifying ones as context is built up. On the whole, concrete objects or concrete acts are most easily represented intelligibly by hand motions. If the utterance has a subject, it is an advantage to have that fact established early. To use Herbert Spencer's example, but in reverse effect (he was dealing with speech), it helps to know first, in the slow and incomplete development with which gestures proceed, that it is a *horse* that is being communicated about, and then that it is *black*; some indubitable context or area of relevance is set up by the first sign. If the beginning were made with *black*, any one of innumerable black objects might follow next; or indeed it might turn out that the information was not about an object at all, but about darkness or night. In speech, whose execution is far more rapid, the memory span easily retains several associated units and their order is accordingly less important, as long as the one accepted convention is consistently adhered to.

[1] Tomkins gives *Tree Indian* for Chippewa, *Bird Indian* for Crow. It is conceivable that there might exist a special rule of element order in tribal designations. But the majority of his listings indicate first that people or Indians are being dealt with, and then add the specifier for the tribe; so that his renderings for Chippewa and Crow are presumably simple errors of translation by the English word order.

Compare: *Arapaho = Indian mother; Cheyenne = Indian finger-cut; Comanche = Indian snake; Navaho = Indian work blanket striped; Pawnee = Indian wolf; Sioux = Indian cut-throat.*

Tomkins has occasional other slips of adjectival order. Apparently where it is a matter of a proper name in English like Standing Rock Agency (p. 49), that order is used. But I query the Little Beaver, Two Owls, Big Bear of p. 63. These might be members of an Algonkian tribe, but more likely they are only renderings of imaginary Indians directly from English into signs.

[2] I had a paper on this as long ago as 1910 in *Anthropos* 5: 204-218.

It remains to be discovered, accordingly, whether it is general considerations of this nature which have chiefly established sign order, or the influence of translation from speech. Both may have been at work.

3.3. I do not go fully into the matter of syntactical order in sentences because too many passages fall under suspicion of having been corrupted to the English sequence, and it will be safer to record new texts in which such error is guarded against than to try to base definitive conclusions on published material which may be imperfect and is at times contradictory.

The probable orders seem to be: subject-predicate; predicate-object; determining noun precedes determined; qualifying adjective probably follows its noun; numerals and restrictive adjectives perhaps precede; "grammatical" elements (plural, possession, negative, etc.) follow the sign to which they relate, but "possessive pronoun" compounds precede their "noun:" *you-own house*.

4. It seemed profitable to bring together as much empirical material as possible on certain limited classes of signs which are somewhat special either semantically or functionally.

4.1. Signs for subjective states or acts: *afraid, fear: shrink from*: 2 indexes forward, curve down as hands pulled back; *ambitious: person, push; fond of, love: hug; jealous: elbowing aside*: fists to body, alternate elbows jerked back and out; *pity*: 2 parallel indexes move forward and down; *pity me*: 2 parallel indexes, backs forward, drawn to breast; *ashamed*: motion of pulling blanket over face; *astonished*: L hand over mouth ± R palm warding off; *angry: brain, twisted; crazy, fool: brain, whirling; annoy: heart, flutter; glad, joyful: heart, day* (= open up), *sunrise; know, think: heart, "drawn from"*?—R hand to R, index turning down; *melancholy: heart, sick; remember, memory: "heart, know"*—since *know* contains *heart, remember* is probably the same sign as *know*; *undecided, perhaps: hearts, two*: 2 fingers to heart, then hand rotated from forearm; *wise: heart, brain, good; forget*: "mental darkness"—said to be same as sign for *night*, except L hand is kept motionless.

4.2. A small class of signs executes motion made with an imaginary tool, usually with two hands. Such are: *arrow* (as drawn from quiver), *bow, bag* (filling), *awl, sew* (with awl), *carry* (load over one shoulder), *pipe* and *smoking, maize* (shown by shelling movement). One-handed are *whip* and *old* (setting a staff forward).

4.3. There is a sort of active-passive distinction in the signs for a few verbs, which is really a centrifugal-centripetal inversion.

Charge others: both fists near R shoulder, moved sharply down and L, fingers snapped open.

Charge against us (viz. being charged): "reverse by holding fists [backs outward] well out in front and snapping hands open toward face."

Give: flat R hand, palm up, at R; moved outward and down.

Give me: R hand open, well in front, at neck level; brought toward body and lowered slightly. So the text. The figure shows the hand at elbow height, brought upward to R shoulder, palm under (perhaps with a downward flip at the very end). Authentication is needed; but the centrifugal-centripetal contrast is sure.

Pity and pity me! See the Signs of Doubtful Reference for this reversal.

4.4. What might be called the grammatical armory of the sign language is a meager array. It consists of signs for denotations which in most languages are expressed by affixes, inflections, ablaut, or other grammatical machinery, but in English, and still more markedly in Chinese, are expressed chiefly

by independent and mostly unmodifiable elements, as in the sign language. This is the apparatus:

For person: *I* = *me, you*, both by pointing. There is no sign for a pronoun of third person who is not present. Tomkins says: "He or him: point right index at person indicated." That of course makes the sign grammatically a demonstrative, like the expression for the first and second person. (It may be noted that some American native languages have no true personal pronoun of third person, other than by default; and some have no affix for third person in the verb.)

For number: *all* is postposed to nouns and pronouns.

Possession is indicated by a simple gesture whose "origin" or pantomimic reference is not clear. It is added to noun or pronoun; independently it is translatable as *have, own, possess*, perhaps *belong*.

"Tense" can be indicated when necessary by independent signs for time relations: *now, soon* (*later, by and by*), *long ago*, "*past*," "*future*."

In a few cases a sort of passive or receptive is indicated by reversing a sign from its usual centrifugal direction to centripetal, as cited in the preceding section.

There is a sign (pantomimic significance not sure) for *no, not, lacking the quality*, postposed to what is negated.

There seems to be no conventional way of expressing an imperative. The sign for *push* (*try, begin*) is also listed under *must* by Tomkins, "used as a command." His sentences no. 54, 104, 123–126 contain English imperatives in the translation, but the action signs have nothing added to their declarative (basic) forms.

Perhaps can be used for contingencies and its sign would therefore be translated also as *if*.

The one "grammatical" sign that must come first—for obvious reasons—is the *question indicator*—slightly twisting the up-raised open hand. It is quite generic, and context decides whether it is best translated as *who, what, which, when, where*, or *why*. Tomkins cites some special cases, such as *question, how many, moon*, for "when," in which *how many* is really *count* (striking down fingers). For "where" he says that several directions can be pointed at after the *question* sign. For "why" he cites only the *question* sign but adds: "turn the hand very slowly." This type of modification of a sign is unusual, except where the function of the modification is transparent (as in speeding a motion up or continuing it longer); which does not hold in this case. I suspect that slowing the *question* sign means something else, such as perhaps: *are you sure?* or asking for *corroboration*.

All the grammatical signs are one-handed and simple—somewhat as grammatical morphemes in spoken languages are usually monosyllabic or shorter. They do however combine, as in *I all* = *we, you own* = *your*.

5. As one studies the sign language, one becomes aware that it is overwhelmingly pantomimic. Many signs are quite transparent, especially if one knows the culture. One begins to follow partly even on first contact, though no complete stranger would grasp much continuity. Other signs appeal as "reasonable" once one has learned their meaning by context, association, or explanation. This semantic near-intelligibility must have made the system rather readily learnable.

Many signs, single or multiple in elements, might however be construed reasonably enough in several different ways, of which the conventionally correct one must be known if intelligibility is to be smooth. One cannot hold three or four alternatives open in memory while the context is slowly eliminating all but one—yet at the same time new open alternatives also get introduced by the growing context. When one has learned the correct meaning of a gesture for which

several meanings might suggest themselves, the correct meaning will generally be seen to be at least or about as "reasonable" on the average, as inferable from the positions and motions executed, as the others. Yet the important requisite as regards effective functioning of the system of course is that each gesture (1) be unequivocally distinctive perceptually and (2) have one and only one meaning or range of meaning, even if this seem more "arbitrary," less obviously pantomimic, than some other meaning. In the end it is this that makes the system a "language."

Nevertheless there is a striking difference between spoken language and sign language in that speech consists overwhelmingly of elements wholly without transparent or inherent resemblance of symbol to signification, but the sign language elements overwhelmingly do show such connection or resemblance between gesture and meaning. That is, the signs mostly in some degree mimic or pantomime[3] the thing, motion, or quality denoted.

This fact shifts interest to the minority of signs which do *not* mimic intelligibly at first sight but embody some convention, and therefore raise a problem as to what this is, or its history.

I assemble here a series of such "dense" signs, all of them with fairly important denotations. For some of them I shall suggest tentative explanations. But I press none. Informants who have been taught[4] practice of the sign language may have been given explanations; and, whether such explanations are objectively founded or not, they deserve to be heard before conjectures by non-practitioners. Also, it is I that may be dense in not seeing a resemblance. On the other hand, there may be other signs that I do not list here because I fancy I see a plausible explanation, which however may be false.

My list extends to about 20 signs out of perhaps 400 pictured by Tomkins (after allowance for deduction of repetitions under different English words). Five per cent of non-mimicking signs is not far from the proportion which mimicking or onomatopoetic words may constitute in some spoken languages.

Of course it is possible that inquiry with informants may quickly reduce the list. On the other hand, inquiry may also lead to quite different explanations; in which case we might construe many of them as counterparts of "folk etymologies," that is, secondary rationalizations. The list of sign language terms without authenticated "etymologies" might even grow with increase of systematized knowledge. If it shrinks, the residual core of unexplained signs will be correspondingly more intriguing.

I may also have had some quick but spurious insights. Thus the all-important *perhaps* and *question-follows* signal, with the hand held up and twisted two or three times: it seems to me to express doubt or ambivalence, and perhaps some stand-offishness, or mild negativism also. At any rate, I have not included it in the unexplained list; but possibly it should be there.

Father: mother man (?).

Mother: Tomkins suggests *suckling*, but there is also a mother sign indicating *pregnancy*.

Brother, partner: 2 finger tips to lips, pulled away, followed by *men*.

Sister: same, but *woman* precedes (*sic*). The parallel fingers probably indicate growth together, but why the lip touch and drawing away?

Brother-in-law: crossed arms, hands in vertical plane, R strikes down—why?

[3] Pantomime is not a strictly accurate term because it refers to imitation performed with the whole body, whereas the Plains sign language is executed essentially by the hands and would rather be *cheiromimic*.

[4] Are practitioners taught the system, or is it possible for them to pick up most of it by watching sufficient context? A series of informants' responses on this point would be worth having.

Friend: raise 2 joined erect fingers: "growing up together." "Friend" may be Indian English for kinsman.

People: "R index, shoulder high, moving up and down." Drawing shows both indexes up, moved back or outwards.—Perhaps "plural" of *man* = R index raised in front of face?

No, not: flat R hand before body, rolled R and palm up, returned. Is this a hand-shrugging I-don't-know negative, a sort of polite discarding?

All: flat hand circled horizontally to left (counterclockwise). Circle for "all-around," "far-as-can-reach"?

Possessive, own, have: fist before neck, thumb inward; tilt fist forward from wrist so thumb points forward.

Another: R hand on L breast, swept back to R in wide arc, ending palm up. Meaning possibly, "Another one disposed of and behind me" (?)

By itself, isolated, free: R hand at R breast, fingers forward, palm half up; jerk hand 2 or 3 times by flip from wrist toward body. "Metaphoric idiom used with other gestures." Wholly unclear.

Forever: R palm to near R side head, moved forward and back.

Fix (= mend?): L hand on edge, R on edge across top of left; R pushed forward like saw, while left rolls level with back up.

Work: hands parallel, on edge, near, R higher and behind; raise and lower both in their planes, from wrist (alternately? jointly??), "to indicate working"—but what kind of work?

Mistake: work, hide. The signs are clear, the logic obscure.

Know, think: R hand over heart, index and thumb spread; move horizontally outward, palm and index down. Tomkins has confused *know* and *know not*; under *think* he says "drawn from the heart," but he gives no sign for *draw*, nor any other sign that seems to contain this motion.

Thanks: 2 flat hands side by side, backs up, swept forward and down toward donor. I have seen this gesture made ritually by the Arapaho in 1900: it seems to be a sort of grateful stroking down the body.

Pity: 2 indexes up, backs inward, carried forward and down toward person pitied. The request *pity me* turns the index backs outward and draws them toward own body.

Spotted, mottled, off-color (S. tribes): 2 hands back to back, fingers rubbed back and forth several times.

Holy, mysterious, medicine, supernatural: 2 fingers held up before forehead, palm side forward, spiralled upward and to R. Tomkins: "something mysterious and unknown." Query: not knowable by senses and reason, hence the whirl up (?).

This list contains five terms for kin, two for other people; half-a-dozen "grammaticals;" three verbs having to do with working, three referring to thought or feeling; and a couple of others. Most of the significations involve interrelations; which is perhaps not surprising, since concrete objects and acts presumably lend themselves more readily to denotation by positions and motions than do relations.

6. The sign language, like writing, is a substitute for speech, not an independent or original method of communication. It is used when addressees are present, but do not understand one's own language; whereas writing reaches distant or future addressees.

The concepts which sign language communicates are basically concepts already developed in speech but translated into a non-spoken medium. This medium is strictly manual: manipulations of hand, hands, and fingers, including where necessary the touching or pointing at other body parts, directions, or colors.

While at present the sign language is reported to be generally accompanied by a running translation into words, as it is also when performed as an exhibition for English-speaking white audiences, this seems to be a

recent feature. The older accounts seem not to mention it, and such inter-tribal use of sign language as I witnessed around 1900 was completely silent. The recent "double" method argues a ceremonious or display usage before a public not well acquainted with the sign language and perhaps partly still learning it as they both see and hear.

While the basis of sign language is concepts that have grown up as expressed in speech, it is unlikely in principle that all such speech concepts should be expressible by manual gestures with equal ease, precision, and effectiveness. Such complete translatability is not achieved when speech is converted into writing, and it would not be expectable when it is converted into hand symbols. Moreover, the sign language with its large "pantomimic" or directly representational component is more of the general nature of early pictographic and ideographic writing than phonetic script, whether syllabic or alphabetic. In fact, it is not even of the stage or category of "mixed phonetic-ideographic" writing like Chinese or Hieroglyphic, since it seems to contain, as a system, no aids or accessories that are phonetic. (Some slight contrary possibilities are touched on in the final section on Problems.) This is the reason the sign language contains no units corresponding to phonemes: it possesses no phonetic constituent nor even any attempt to translate phonetic elements into manual symbols. Herein it differs from all true writing systems, even early Sumerian, Egyptian, Chinese, and probably Maya, which very soon added some phonetic endeavors, no matter how coarse, to the mere visual delineation of things and acts. So far as this limitation of stage of execution is concerned, the sign language has remained at the level of unimproved, ungrafted-upon pictography, which indeed writers on sign-language have been fond of comparing it with.

On the other hand, *specific* resemblances between sign language and pre-Caucasian American pictography are really very few. The similarities are generic and only two: both methods appeal to sight, and only to sight. The *positive conventions* which are so strong in the sign language are lacking in pictography. I know no picture writing in which an erect index finger means *man*, or the hooked fingers swept down the side of the head mean *woman*, or other signs of similar conventionalization.

Another obvious difference is that the sign language is actually communicative in intent, whereas native art was primarily decorative. It might also serve ceremonial purpose, in which case it worked out certain symbols. But the meaning or purpose of these was known beforehand—somewhat like the words of petitioning prayers or compelling formulas, or the motions of a dance—so that it was their *enactment* that counted, as contrasted with communication. It is quite likely that most communication, except where actual words were used in ritual, is read into ancient pictography by us rather than having been present in intent. If communicative purpose had been present, we ought to be able to understand a large proportion of preserved pictographs instead of being so largely baffled by them.

Another point of difference is that a pictography able to communicate a wide range of information presupposes an ability of realistic representation and discrimination that in general was far beyond native capacities. Such ability generally has to be taught or learned and rests on a developed tradition. On the other hand, the manual and digital skill required to make sign language gestures is in no way special. What there is traditional in it is its conventions: associations of particular gestures with particular meanings. Adequate execution of the gestures would never require more than several trials and might succeed at the first attempt.

Of course, it is also possible for pictography to get along with a moderate degree of skill in lifelike representation, in proportion as it succeeds in developing accepted conventions. This is the path followed by

the picture-writing of southern Mexico, which grew up in a society calendrically interested and therefore future-oriented—also elaborately ritualized as well as technologically diversified and expert.

As for the non-rock-carved pictography of the Indians of the United States and Canada which communicates information on events, the first question is how much if any such visible communication there was before Caucasian stimulation. Personally, I feel quite dubious whether there was any. All the recorded pictographic messages and letters may be products of stimulus diffusion from observation of alphabetic writing.

True, it is also possible that the sign language is post-Caucasian. But, whether early or late, the sign language had two advantages over picture writing, which presumably caused it to become standardized, effective, and widespread. First, it resembled speech in that while evanescent its medium was bodily, and second that it was directed at specific, living, present auditors, who might make reply; whereas nonevanescent picture writing involved extrasomatic media and materials and was directed to remote, potential, unknown, or future audiences or recipients. In both respects the sign language remained close to the conditions and orientation familiar from spoken language, whereas pictography was a move in the direction of conditions and purposes familiar in literacy, but a highly imperfect move in that direction.

It cannot be emphasized too strongly that the sign language contains a large ingredient of convention, in fact that specific convention is of its essence. It embodies some "natural" gestures such as might be made spontaneously and understood without learning. But it is in no sense a "universal" sign language as Tomkins calls it, and as Mallery's comparisons with deaf-mutes' and Neapolitans' signs suggest he wanted to believe. The cupped hand before the mouth might be understood in any culture as denoting drinking; and it is of course potentially extensible to water; but that it was extended to denote water in such meanings as *lake* and *island* and *drown* is a specific convention of the Plains sign language. Ripples might have been chosen instead to denote water, as in Mexican, Egyptian, and allegedly in Chinese writing. All we can as yet say about the general direction of Plains convention is that it perhaps favored conventions which had reference to human bodily activity in connection with the referend, rather than an intrinsic act or property of the referend—*drinking*, in short, rather than *rippling* or *splashing* or *flowing*. Drinking might be easier to represent by manual motions, rippling by linear execution with stylus or brush; but be that as it may as to the reason for the difference in convention, in this and other cases, convention becomes an essential ingredient in any communications system.

(The term convention is of course not to be understood in any literally conscious sense, as if people had "convened" in order to come to an agreement on a problem, but as an unplanned process by which tradition becomes established and effective.)

Another instance of a convention-bound sign is the negation, important not only in sign language "sentence utterances" but in sign formation. According to Tomkins, it is a throwing to the side of the droop-extended right hand while it turns upward. I think most of us reared in Western civilization would, in a situation of naive nonacquaintance, tend to construe this as a gesture of indifference, doubt, or so-be-it acceptance—a sort of shrug—rather than as the flat negative. It seems, however, to be the usual *not* and *no* gesture.[5] In our Western culture we would certainly understand a sidewise head shake as negative. A sidewise shaking of the raised flat hand is actually used widely in Latin America, and tends to be understood

[5] Mallery also gives this for Dakota (four informants), Mandan-Hidatsa, Kiowa, Comanche, Wichita, Sahaptin (pp. 440, 441).

in the United States.[6] A shake of a raised finger to right and left might or might not be understood.[7] A raised palm would I think be spontaneously understood rather widely as "do not come forward," "do not pursue the matter." Yet the most nearly standard or commonest negative sign in the Plains is the throwing-open or pushing-away backhand gesture.

And it is interesting that something very close to the raised flat-hand back-and-forth sidewise motion which is actually reported as having a secondary, local occurrence as *no* in the Plains—namely, a slight back-and-forth *rotation* of the raised palm—is the regular *question* sign throughout the Plains. In short, there is a natural and spontaneous basis for signs, but they are defined by convention.

When we correctly grasp a pantomimic sign-language gesture, we have a sense of achievement, are pleased, and remember the meaning. When a gesture is puzzling, or we can conjecture several meanings for it, we feel baffled. The result is that we tend to overestimate the pantomimic transparency of the system, or at least to assume that such a transparency lies just below the surface, which is certainly not necessarily always the case. It seems reasonable to believe that the great majority of signs are representative or mimicking *in origin*, possibly all of them. But what is characteristic of the sign language as an effective system of communication is precisely that it did *not* remain on a level of naturalness, spontaneity, and full transparency, but made artificial commitments, arbitrary choices between potential expressions and meanings.

It remains to be ascertained by directed inquiry how far sign speakers use their signs by rote memory, or on the contrary understand their origin and can explain seeming arbitrarinesses. Even in the latter case, it will be necessary for the student to try to judge how far the explanations are ex post facto rationalizations, or mnemonic devices, and not actual historic developments.

We shall have to keep in mind in this connection the "etymology" of Chinese characters (the great majority of which are combinations of sound constituents with meaning classifiers or "radicals," many of them being already previously combined). The Chinese seem to have traditional explanations of all characters that are not patent mere pictures, and many of these are likely to be historically correct, whereas multitudes of others are fantastic and highly improbable explanations, though perhaps not without value as mnemonic aids in learning and remembering characters. One of the chief inquiries in future sign language study should be directed at this point, of whether such explanations of non-transparent meanings as executants can give are historically realistic or fanciful.[8]

However, we need not fear a situation as difficult as in Chinese, for several reasons. First, Chinese writing runs up to about 8,000 characters, even after definitely rare and technical characters are omitted. We do not really know whether any sign speaker controlled even 800 different simple and compound signs. Second, the Chinese complexities are due to the combination of ideograms with glottograms—meaning-classifier signs and sound signs—and the latter coming in a bewildering array of homonyms. But the sign language has no second array of phonetic elements nor apparently a second array

[6] Mallery, p. 440, cites this as a negative from Dunbar, Long, and Creel. He adds a *single* motion of R hand to R before the face as being cited by Wild, and as given to himself by Cheyenne, Arapaho, Crow, Hidatsa, and Arikara informants.

[7] Mallery actually cites this, p. 442, fig. 270, but only for the marginal Paiute and Apache.

[8] Thus the Chinese character for *wo*, "I," contains radical no. 62 of the 214 (pronounced *ko* when alone), which relates to weapons and shows 2 crossed spears, and which contains also a phonetic element that gives the sound *wo* of the spoken word. The reference to "I" is explained through the radical, thus: the two crossed spears are opposing rights, by extension my rights, and therefore *me*. (Wilder and Ingraham, *Analysis* 1922, no. 2; Wilyer, *Characters*, no. 71Q).

of elements of any non-manual order. If there are complicating principles still to be discovered in the sign language, they are only of subclasses of manual signs. It is because of this possibility that I have in the body of this paper stressed the intensive analytic classification of sign elements.

How far the sign language may be extensible is unknown. Signs have been recorded for *automobile* and *motion picture*, but these are part of the daily life of modern Indians. No doubt signs could be devised for carburetor, valves, piston rings, and accelerator; but in most cases it would be simpler to use the English terms even as between a Cheyenne and a Crow; just as if a Cheyenne and a Crow wanted to discuss Whitehead's philosophy they would probably know of him through English and continue with that medium. After all, the sign language was devised to communicate fairly elementary things in essentially simple situations. It undoubtedly is capable of expansion; but it seems likely that any notable expansion into abstract or subjective discriminations and nuances would be possible only, as in the case of written speech, by the addition of symbols for the *sounds* of speech.

7. In the sixty or more years that the sign language has been neglected, the analysis of culture and especially of spoken language has advanced enormously. It is probable that systematic analysis would result in new conceptions, and certainly more definite ones, regarding the sign language.

What is needed first is the complete lexicon, with regional and dialectic variations in their place.

Equally important is a sufficient corpus of text, preferably of speeches actually made, actual conversations, narratives of actual events.

While the grammar of sign language seems exceedingly rudimentary, the grammatically functioning elements or surrogates should be inquired into exhaustively and with precision. Order is certainly important, and probably fairly prescribed in the interest of intelligibility, though the rules may be more complex than so far indicated. There may have been some invasion of these rules by English influence, or even variability according to native mother tongue. Grossly, the position of qualifying noun, adjective, or verb to the grammatically governing but semantically qualified noun seems most in need of verification.

I am confident that the basic record can and should be in verbal description. With skill, descriptions can be brief and vivid—briefer than they mostly have been. The first requisite of course is to distinguish the characteristic pattern of motion or position from accidentals. Intelligent informants will grasp the point here. There is no harm in a few obvious abbreviations, like R and L, but in general abbreviations and symbols should be left to force their way into usage, not be sought in advance.

The verbal description should be supplemented by outline linear sketch—as a check, and also to correct ambiguities or awkwardnesses of description. (In the same way, a good description will show ambiguities and errors in sketches.) Outline drawings like those of Tomkins are mostly adequate; Mallery's are better drawn but would be costly today. Photographs introduce new complications, especially of accidentals. The important requisite is a *decision* as to what position or motion is the one essentially aimed at or intended, plus some recognition of the range of allowable variability, speeding up, curtailing, etc.—exactly as in the determination of phonemes. Photographs may happen just to catch this salient characteristic, but the inquirer must *know what it is*. If he does not know, he may snap his shutter a tenth of a second too soon or a fifteenth late. The ideal perhaps would be a motion film taken *after* the signs used were known, not before. Yet going over a strip of film to select out the most characteristic position or moment is inevitably time-consuming and tedious.

Films shown in motion reproduce total experience, including tempo, elegance, etc. They stimulate interest, and are excellent as an introduction or in review. They are of course only fleeting raw material for scientific understanding and record.

I suspect that half or a majority of the substantive data on the sign language may prove to be already on record. What is needed is *systematic analysis of the sign language in terms of itself*, which is equivalent to a full and meaningful description of its properties.

What the particular terms may be through which descriptive and functional understanding can be obtained, is something I have tried to suggest by the several special analyses and classifications proposed in the body of the present paper. Obviously, these are no more than samples and indications, and quite other considerations may have to be taken up before all aspects of the language are covered.

I trust it will be understood that I do not consider the sign language itself to distinguish nouns, verbs, adjectives, etc. It translates what are noun and verb morphemes in spoken languages. It suppresses most grammatical and relational morphemes—much as a telegraphic style of writing suppresses some. Such affixes or relational elements as it cannot, on account of intelligibility, merely omit, it accepts as units of the same order as stem morphemes. The reason it has no equivalent to phonemes is that it begins to operate only on the level of morphemes, and so far as possible semantically substantive morphemes—many relational ones would be hard to devise gestures for.

An analysis of sign language in terms of itself would involve a classification of its semantic concepts and one of its executional forms.

The classification of meanings would include consideration of which classes were richly or meagerly developed; how far subjective denotations, abstractions, qualitative properties might be scanted because of difficulty of representational coding.

The analysis of forms executed would include a classified list of minimal elements; consideration of compounds of these to express units of meaning; the grouping of elementary and compounded signs into statements; the order both within signs and between them; the use of redundancy or determiners and over-determiners in the interest of ready clarity. There would further be consideration of homomorphs and near-homomorphs or contrastive pairs of these.

The question would also arise whether non-morphemic sounds of acts like sucking, blowing, smacking, belching, hiccupping, flatulating, neighing, bellowing, chirping were allowed to be directly imitated as supplements in sign language or were puristically ruled out in the interest of elegance of execution.

It will also be important to inquire of informants as to the reason of both simple as well as compound gestures—why they are executed as they are, whether merely conventional or explainable. If some of the answers are only rationalized folk etymologies, they will nevertheless help delineate the character of the system as a whole. I should expect a residuum of unexplained or dubiously explained signs, though a minority.

The possible influence of element order and word order in the native speech of diverse tribes would further have to be gone into.

And finally there would be the question of regional or tribal dialects of sign language: how important these were; whether they affected chiefly particular signs or extended to principles; and if they were associated with differences in the use and function of the sign system in the total life and culture.

While I am confident that the Plains sign language is a derivative of spoken language—a special and partial translation of it for particular purposes—it is never-

theless a concordant system of extraordinary interest. It seems consistent, it was unplanned and grew up traditionally, it was effective as well as picturesque; and if it proves to have been limited in range and vocabulary, it makes up for these limitations by an unusual originality of execution. It is a definitely small system, but well characterized and apparently clearly bounded. Like every such limited universe, its serious and penetrating student can hope to achieve the ultimate reward of virtually exhausting knowledge and understanding of the system.[9]

June 30, 1957

[9] Carl and Florence Voegelin, West, William Shakespeare of Arapaho, Wyoming, and I met in Berkeley September 9–13, with fruitful clearance of ideas and sharper realization of problems. It was there I learned of the one 20th Century contribution of theoretical importance on sign language, J. P. Harrington's five articles in *Indians at Work* in 1938 which I should have known before but have not yet seen at the time of proofreading on October 1, 1957.

AN ACOUSTIC ANALYSIS OF SHAWNEE: I

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0. Introduction
1. Vocalic spectra
1.1. Total vocalic range
1.2. Vowels
1.3. Vocalic sequences

0.1. The following pages contain a study of the sounds of the Shawnee language; precisely, it is an instrumental acoustic phonetic study.[1]

The corpus of data for the following study consists of a large number[2] of sound spectrograms made from tape recordings of Shawnee speech.[3] The method of study followed is inductive, being the classification of spectrogram segments and features on the basis of similarities and regularities within the corpus of data.

Phonetic minutiae below the limits of perception of the ear are usually disregarded in structural linguistics as irrelevant and confusing.[4] In other words, variations in the signal produced by the sender which are too minute for the receiver to register are not part of the CODE, analysis of which is the concern of the linguist.[5] The present study is not concerned with the limitations of the ear or, directly, with linguistic units.

As a frame of reference regarding linguistic units, one might assume that allophonic variation in phonemes (or for that matter in any kind of functional behavioral unit) can occur on three levels: 1) below the human perceptual level, within a continuum, conditioned entirely by the physical and motor makeup of the speaker—by the shape of articulators, resonators, direction of muscular movement, etc. Principles involved in variation on this level may well be inevitable and universal. 2) Variation within a continuum which is automatic and may be unperceived by speakers of a given language, but which is not inevitable, though often of very common occurrence. In other words, alternative tendencies or principles may exist, even for subperceptual variation. 3) Association of two or more discontinuous acoustic areas in the variation of a single unit. Such seemingly arbitrary sub-phonemic variation may be unique to scattered or specific languages.

This distinction among three (admittedly undemonstrated) levels of conditioned or automatic variation is made, not in order to suggest any premises or program for the following dissertation, but to try to explain why the procedure followed is different from —and perhaps less inspired than—that of a phonemicizer or one who is, following Hockett, describing 'the acoustic correlates of the phonologic elements'[6]—the 'elements' being already identified. That is, we are attempting to proceed from the minutiae of speech sounds—individual instances of pitch, duration, amplitude—to the patterns and

[1] Kenneth L. Pike, Phonetics, p. 4 (1943).

[2] About 1000 spectrograms were made in the course of this research, many of them covering the same, or overlapping, sections of tape (made at different times or with different settings, for different purposes). All or parts of about 300 different phrases are included in this corpus.

[3] The tapes used are parts of a large corpus of the speech of Mary Williams, a woman about forty years old from Shawnee, Oklahoma, which was recorded in 1953. The work of recording and transcribing these texts was done by C. F. Voegelin and several students participating in a Linguistic Institute at Indiana University during that summer.

[4] See, for example, Pike, *op. cit.*, p. 29.

[5] Bernard Bloch and George L. Trager, Outline of Linguistic Analysis, L. S. A. Special Publication, p. 39 (1942).

[6] Charles F. Hockett, Manual of Phonology, p. 192.

larger complexes into which we may structure and classify the corpus.

The presence of physical patterning in speech sounds themselves—apart from articulatory or perceptual complexes—is generally assumed by linguists, who find it more practical to proceed from posited functional or abstract units, or at least an assumption that these exist, to specification of their "variants", rather than the reverse. As a corollary, particularization typically reaches only as detailed a level as is adequate to clarify the linguistic system. By contrast, we are concerned first with phonetic particulars and can only suspect that the formal classes which emerge will have some rather close relationship to linguistic units.

0.2. The physical bases of acoustic phonetics and the fundamentals of spectrographic method are treated in M. Joos, Acoustic Phonetics (1948). A summary treatment of this material, with a rather critical appraisal of the potential usefulness of spectrographic study is given in C. Hockett, A Manual of Phonology (1955), pp. 180–211. These sources have been basic in our understanding of the techniques used and as a framework for conceptualizing the present study (though we do not follow them wholeheartedly in the type of study which we here essay).

Existing studies using spectrographic data deal (a) with problems in the phonology of specific languages (for example, Fischer-Jørgensen's specification of the Danish stop consonant system[7]); in such studies, the concern is generally with clarifying or interpreting data already structured in auditory analysis. (b) With isolation of the essentials in the production of selected vowel or consonant qualities, etc.—matching acoustic features with perception; work done along these lines has used synthetic speech or isolated sounds (e.g. studies made by Haskins Laboratories scholars primarily interested in perception, communications engineering, etc.).[8] (c) With practical uses of the spectrograph and similar electronic instruments—(i.e. language teaching, speech correction; for example, Potter, Kopp, and Green, *Visible Speech*, the initial exposition of the spectrograph, is oriented toward teaching the deaf).[9]

Such studies are secondary to phonemicization by auditory techniques or to an accepted conventional orthography, as with Visible Speech. As a corollary, spectrograms used are seldom made from natural speech, but are selected, on the basis of information already controlled, to deal with specific problems.[10] Thus, the existing spectrographic literature can give little guidance toward a holistic study of the speech sounds of a single language.

0.3. Sound has three aspects, from an acoustic point of view. These are FREQUENCY, AMPLITUDE, and DURATION. The first of these offers the greatest scope for manipulation and variation—for example, in human speech—and treatment of frequency, the distribution of energy in the acoustic spectrum, constitutes the greatest part of this study, sections **1** and **2**. Pitch, treated in section **5**, the location of the fundamental frequency in vowels and voiced consonants, is another facet of this aspect of sound. Amplitude is treated in section **3**; and duration, the stability and variation of sound over time, in section **4**.

1. This section will first exhibit the qualitative range covered by the total Shawnee

[7] Eli Fischer-Jørgensen, Acoustic Analysis of Stop Consonants, Miscellanea Phonetica 2.42-58 (1954).

[8] For example, Delattre, Liberman, and Cooper, Two-formant synthetic vowels, Le Maitre Phonetique (1951); Liberman, Delattre, and Cooper, The Role of Selected Stimulus Variables in the Perception of the Unvoiced Stop Consonants, American Journal of Psychology (1952); articles by these and other authors in the Journal of the Acoustical Society of America.

[9] R. K. Potter, G. A. Kopp, and H. C. Green, Visible Speech (1947).

[10] cf. Hockett's remarks on 'spoon-feeding,' *op. cit.*, p. 192.

vowel inventory (**1.1**); and then subdivide this range into smaller structurally unified areas, describing each of these individually (**1.2**) and in sequential combinations (**1.3**).

By VOCALIC, we mean that energy is concentrated in HARMONICS, narrow parallel lines, and that harmonics are found over the whole range of frequencies (or at least that no area is consistently empty of energy); NOISE (energy not concentrated in harmonic lines) is typically absent.[11] In describing vocalic segments we measure the vertical location of FORMANTS, frequencies at which energy is concentrated. In vocalic segments these concentrations are continuous through the duration of the segment as dark bands. As a general thing we trace the lower two formants of vocalic segments, at times the third. Formants are measured at approximately the center (darkest point) of the dark band, in terms of cycles per second (abbreviated c.p.s., symbolized ~). Measurements are taken vertically, from the base line, measuring 1000 c.p.s. to the inch. When tracing the formants of a vowel we take such measurements at 2 centisecond intervals. (Time is the horizontal axis of spectrograms, with 20 centiseconds to the inch.)

1.1. [First and second formant measurements of single points in 150 randomly chosen vocalic segments were plotted on a graph in which values for the first formant (vertical axis) are plotted against values for the second formant (horizontal axis). In this type of graph, suggested by Joos,[12] values from low to high run from top to bottom and from right to left for first and second formants, respectively.] The points measured in these vowels are approximately midway in duration of the segments, at the maximum of peak or dip in one or both of the formants. We will hereafter speak of such points as MAXIMA. The sample includes only segments which show clear maxima. The resulting vocalic range, as charted, falls within a rough triangle with apices at approximately (a) 400 by 2800, (b) 1100 by 1400, and (c) 500 by 800 c.p.s. The distribution of the sample is concentrated in the vicinity of the apices and is continuous but sparse along side ab, continuous and more concentrated along side bc; side ac is open.

Though individual boundaries are a matter of impression only, there seems to be a rough tendency to clustering of individual points within this generally continuous distribution range. Approximate cluster areas are given rough phonetic labels, which will be used in the following pages to refer to these areas.

1.2. These paragraphs will attempt to define more precisely the individual vowel areas and to demonstrate the phonetic patterning within them; demonstration of the latter is felt to constitute a justification of the former.[13]

A nuclear or "target" area is given for each vowel group. This is derived from measurements taken at the maxima in relatively long segments, one or both of whose formants are bi-directional—that is, have a medial bending; this point is assumed to be maximally free from the qualitative influence of neighboring segments. Having taken a number of measurements and approximately circumscribed the nuclear area, we look to see what patterning appears

[11] cf. Jakobson, Fant, and Halle, Preliminaries to Speech Analysis, p. 18. Vocalic phonemes 'have a single periodic source.'

[12] [Acoustic Phonetics (1948). A large number of graphs and charts were included in the doctoral thesis on which this series of papers is based. The omission of charts and graphs from the published version has necessitated the making of slight changes in the author's wording at a number of points. A copy of the original thesis, containing charts and graphs, is on deposit in the library of Indiana University.]

[13] What is attempted is simply a classification and ordering of spectra, and has phonemic implications only in that it is assumed that phonemic units will not cross-cut units which are found to be structured wholes on a purely phonetic level. No assumptions can be made concerning the status of the units described as parts of larger units, or concerning the interrelationships between the units.

within it, in the location of specific maxima. The main force which we have considered in this respect is consonant environment. (Duration of the total segment is also felt to be a factor here, but since only relatively long segments are used at this stage, consideration of duration is postponed.)

A number of segments were plotted over their total duration, by means of measurements of formants one and two, taken at two-centisecond intervals. From the chart resulting from this procedure, the whole phonetic area or DOMAIN covered by a given vowel can be circumscribed, and we can make some suggestions as to the internal patterning and economy of the domain. Again, we operate with the premise that environment and duration are factors influencing the course of specific segments within a vowel area. An estimate is made of FOCI of vowel onset and terminus as conditioned by specific consonants or consonant groups and of the effects of both environment and duration in the paths taken by vowel formants.

1.2.1. This section describes segments of the group whose maxima fall in the *a* territory.[14] The sample which has been observed includes a duration range of six to 21 centiseconds.

Vowels included in the *a* group have a first formant range between 600 and 1050 cycles, a second formant range approximately between 1000 and 1650 cycles.

The lowest second formant measurements are, on the whole, those following labial consonants (F2 below 1300 ~). Preceded by a velar, (k), *a* falls within a narrow area somewhat fronter than when conditioned by labials (F2 between around 1200 and 1400 ~); (h) seems to have a similar effect. A third area is formed by *a* preceded by dental and alveolar consonants (F2 above 1300 ~). First formant measurements subdivide these divisions made on the basis of the second formant: after nasal consonants, the first formant measurement is consistently higher than 800 ~. (h) also conditions a high first formant. Obstruents, (w) and (y) all seem to condition a relatively low first formant. The first formant may be slightly lower after (l), (s) and (*θ*) than after plosives.

Individual consonants, then, exert rather specific influences on the placement of the vowel formants, even at the point furthest from the consonants. For example, both second and, especially, first formant measurements are low after (p) so that these segments cluster at the top and right of the target area. Segments after (m), by contrast, cluster low and right. *a* following (t) falls relatively high and left, but after (n) quite low and left, etc. Similar consonants have similar effects and the upper half left corner of the area is especially crowded; this group of consonants have very much the same effect.

There appears to be a strong tendency for a rise in the first formant of *a* segments; the movement of the second formant is more directly conditioned by consonant environment and is more often unidirectional. In labial-to-velar or dental environments, for example, formant 2 may simply rise, formant 1 rise with or without falling again. In dental-to-velar or labial, and velar-to-labial environments on the other hand, formant 2 may fall, formant 1 rise and fall (except in very brief segments). In an environment of articulatorily similar consonants (e.g. n-t, t-l, k-k) formant 1 movement is mainly conditioned by the production type of the consonants, but may fall and rise; formant 2 movement is falling, followed by a rise to the appropriate consonant position. Similarly, when followed by # (phrase-final), *a* has a rising first formant, a slightly falling

[14] The following conventions are followed in the use of orthographic symbols: spectrum units defined or the subject of definition are italicized (as, *a*). Those provisionally accepted in the process of defining other units are parenthesized, e.g. (p).

second formant, vowel quality thus becoming lower and more back.

Comparing relatively long and relatively short segments in similar environments (e.g. m-t, k-t, n-t), the main difference seems to be a first formant rise and fall in the longer segments contrasting with less first formant bending in the shorter. The formant remains approximately level at the crest of its curve for a longer or shorter period of time depending on the total duration of the segment.

In general terms, then, longer and shorter *a* segments differ qualitatively in that the longer tend to be lower and, apparently, slightly backer than the shorter segments. The first formant difference may be as much as 200 cycles; we will not attempt to state it precisely for any environment, as it appears to be a covariant of quantity.

1.2.2. The *o* sample covers a duration range of approximately five to 18 centiseconds. The qualitative limits of the area are approximately defined by first formant extremes of 400–900 cycles, second formant 800–1400 cycles.

Specific placement of maxima within the nuclear area is conditioned by a combination of the factors of consonant environment and duration.

Both (p) and (m) condition a low second formant, but (m) precedes a low, (p) a high first formant. The velar, (k), combines moderately low first (around 500–600 cycles) and second (950–1050 cycles) formants. (h) precedes a very high first formant, with a formant 2 effect similar to (k). The dental-alveolar group condition a second formant higher than 1100 cycles; this area is subdivided, but not clearly, by second formant placement. Here the (n) territory is distinctly lower than the others (with, that is, very high first formant; formant 2 is also quite high). (*θ*) tends to precede a relatively low second formant and high first formant, bordering on the (k)-area (about 650 by 1200 cycles). The (l) territory is somewhat higher and fronter than the (*θ*) (around 550 by 1300 cycles). (t), (s) and (y) have overlapping areas still higher and perhaps fronter (F1 above 550 ~).

After labials and before dental or velar consonants, formant 1 rises more or less directly. Formant 2 progresses directly or may fall and rise slightly. In velar-to-dental/alveolar environments, relatively short segments proceed directly; longer segments combine a second formant fall and rise and a first formant fall and slight rise. The vowel quality thus becomes at first higher and backer, then more central.

In segments following dentals, the second formant falls. In shorter segments this movement is direct; in longer, it may fall and rise. First formant movement is usually unidirectional. When followed by #, formant 1 rises sharply, formant 2 falls.

Comparing longer and shorter *o* segments in similar environments (e.g. l-t and l-*θ*, k-*θ*, m-l) the longer are uniformly more back in their overall placement. This results in two cases from a downward bending of the second formant; in the third, the second formant begins low (following m) and remains so for half the duration of the segment. First formant movement is not so uniform, and in many of the long segments the tendency seems to be to a rather level first formant position. The correlate of longer duration, then, is a relatively low second formant; long *o* segments (/oo/ or /o·/) would be placed further back but approximately level with shorter *o* on a phonetic chart.

1.2.3. We have plotted *e*-segments covering a duration range of six to 18 centiseconds. The *e* area is bounded by a first formant range approximately between 500 to 900 cycles, and a second between 1400 and around 2100 cycles.

There is some clustering within the scatter area of formant measurements of a group of *e* maxima. Labials clearly tend to condition a low second formant. After (p), *e* has a high narrow first formant range (around 5–700 ~), and the second formant may be higher (16–1800 ~). (m) does not seem to condition

as low a second formant as the (p), though it is low in comparison to the other nasal, (n).

Dentals cover a wide range of variation in first formant position, with (t), (θ) and (l) centering around 600, (n) ranging between 7 and 900. The second formant, on the other hand, seems to center around 19–2100 for the dentals in general, with (l) perhaps the highest, (θ) the lowest (though these tendencies may be apparent only).

Formant 1 and 2 measurements of a number of *e* segments at two centisecond intervals appear to show a general rising tendency for both formants, so that the courses of the segments are, ceteris paribus, falling and fronting. In labial or velar-to-dental consonant environments, *e* is a predominantly fronting glide which, aside from the overall fall or rise determined by specific environmental factors, dips in its course to a point somewhat lower and fronter than at its terminus. In dental-to-labial or velar segments, the path is approximately the reverse of this. Between identical or similar consonants, the typical path is falling and somewhat fronting, followed by a rise to near the point of onset. Sequences with final # have relatively straight paths with rising first formant; the first two are also fronting, the third slightly backing from a very front onset position. Brief segments, however, progress more or less directly, with little formant bending and unidirectional paths.

The overall correlate of greater duration in *e* segments, then, is a fronter and lower position on the chart—a higher first and second formant (s-p and t-p, longer and shorter n-l).

1.2.4. The *i* sample covers a duration range of approximately 6 to 16 centiseconds, a range which is limited in comparison to *o* and *a*, especially in containing few relatively long segments. The qualitative range of *i* segments falls between about 350–600 cycles for the first formant and 2200–2800 cycles for the second.

Charting of formant 1 and 2 measurements of a number of *i* segments shows that front-back movement is not nearly so great as that along the vertical axis. The clearest consonant influence is that affecting vertical height: one group (p, t, k, s) condition a low first formant (below 450), while (m, n, l) and (h) condition a relatively high first formant (450–600). (θ) appears to be intermediate in its effect, with first formant placement about 450 cycles. Consonant influences on horizontal placement are less clear; however, (p) is followed by a very low second formant, and (k) and (h) generally seem to bend the second formant relatively high. Dentals, then, tend to be localized in a large mid-area.

The main tendencies affecting the paths of *i* segments, apart from the influence of consonant environment as just described, are tendencies to a high second formant and—less pronouncedly—to a low first formant. Thus, preceded and followed by members of what we may call the Cx group (p, t, k, s, θ), a (relatively long) segment rises and fronts and then returns to a position fronter than its position at onset. Segments preceded and followed by members of the Cy group (m, n, l) or (h) have a similar, though generally lower path (e.g. m-l, h-n). Preceded by a member of Cx and followed by a member of Cy, the path is falling, at the same time fronting and returning to approximately the initial F2 position (or slightly fronter than at onset). Preceded by a member of Cy and followed by Cx, the path is rising, and again fronts and bends back to approximately the original F2 position. Preceded by a member of Cx and followed by #, the path is falling and fronting (without bending back). Preceded by a member of Cy, the path is rising and fronting (without bending back).

The chief effect of duration on quality would appear to be the extent of the second formant bend or frontward progression. If one plotted the mid-point formant readings of such *i* segments in similar environments, longer duration would tend to correlate with a higher second formant position.

1.2.5. When the delineation of areas utilized by individual vowels and the nuclei

or target areas therein are summarized on a formant chart it can be seen that the larger areas on the chart overlap, while the nuclear areas do not. It would be possible for a brief segment to lie entirely or almost in, for example, an area in the vicinity of 700 × 1400 cycles where the *o*, *a*, and *e* domains overlap. Within an environmental matrix there would be no confusion in identifying the segment, since this low front section of the *o* domain is used preceding or following (n); as a low back point in the *e* domain it is conditioned by (*w*) (and possibly by (m)); and as a rather high front *a* by (k) or (t).

Further, apart from consonant environment, the direction of movement would distinguish segments in this area; an *a* segment with onset in this area would surely be moving downward and probably slightly back; an *o* would be in the process of rising and backing; an *e* would be fronting and probably falling slightly. Similarly, in the region of *e-i* overlap, around 5–600 × 2250 cycles, *e* follows (y) and dental members of Cx, and perhaps (l), and the direction of movement is central and falling; *i* follows labials, and movement is fronting and slightly rising.

The question of identification of smaller, isolated, segments (of, say, one or two centiseconds duration) would appear to be academic as far as the functioning of the language is concerned; we have not considered the role of the upper formants or other acoustic factors apart from the position of formants 1 and 2. Up to the point discussed here—that is, the identification of the briefest whole vowel segments—we feel that permutations of the first and second formant position, consonant environment and characteristic direction of movement are quite sufficient.

To the localization of the four vowel areas made in **1.1** we can now add the following specifications and qualifications. Target areas or nuclei are areas within which the maxima of relatively long segments fall. Onsets, termini and entire brief segments may lie without these nuclei and still fall within larger areas which have been called domains. Some of these domains overlap toward the center of the vocalic range; shorter segments are uniformly more central than longer, and are thus more likely to fall in the overlapping areas.

Within the four vowel domains, the selection of quality over the course of a vowel segment very largely depends on the nature of the preceding and following consonants. In general, labial consonants condition the use of the relatively back portions of a given vowel domain, dental consonants the front portions. The velar is variable, conditioning a front position in *o*, *a* and *e*, a back position in *i*. Nasal consonants uniformly condition relatively low vowel placement, as does (h) and the phrase-final (#). Plosives and (s) uniformly condition relatively high placement; (*θ*) and (l) seem rather variable. A vowel domain, then, can be pictured as a gridwork with the location of the initial and final portions of vowel segments indicated by the specific preceding and following consonants. To some extent the course of the whole vowel segment is also conditioned by these factors—for example, a vowel following a labial and preceding a dental must of necessity cross the width of the vowel domain, and must start low and rise if the labial is also a nasal and the dental is also a plosive, etc.

Over and above the necessity for placing vowels against this consonant foci grid, however, there is a certain amount of flexibility in the exact path which a given vowel segment will take between its onset and terminus, the more so as the segments are longer. We have seen that in each of the four vowels there is a tendency for the quality to vary in a given direction, being more central (and therefore more undifferentiated) in short segments, less central (more differentiated) in long. Thus longer *o* segments are more back, longer *a* are lower and more back, longer *e* are lower and fronter, and longer *i* are fronter than shorter segments in

the same domains. In each case there is a definite direction or point toward which the vowel quality aims, so to speak, and which is more closely approximated in longer than in shorter segments.

1.3. This section is concerned with stretches of vocalic spectrum in which the quality shifts between two or more of the vowel domains already delimited (**1.2**). These shifts always involve the *o* or *i* domain and have been usually written with, respectively, (w) and (y).

Vocalic sequences can be roughly classified and described as: (1) an immediate shift from a maximal point (of insignificant duration) in the *i* or *o* domain to another vowel domain (where duration is usually more prolonged); (2) a shift from another vowel domain to a point in the *i* or *o* domain (the reverse of (1)); (3) more prolonged duration in the *i* or *o* domain followed by a shift to another domain; (4) as in (2), followed by more prolonged duration in the *i* or *o* domain; (5) a shift from one vowel domain to a point in either the *i* or *o* domain, followed immediately by a shift to another domain. Various combinations of these alternatives can occur, and long stretches of shifting vocalic spectrum are common in Shawnee.

1.3.1. Vocalic segments involving transition to and/or from a maximum in the *o* domain are included here.

Initial and post-consonantic sequences (group (1) above) are glides directly from the *o* domain to that of the following vowel. The location of formants at each terminal of the segment is conditioned by the consonantic environment. That is, the placement of formants at the beginning of the vocalic segment in (kwe) is just like the equivalent point in (ko), but while the movement of the latter vowel is confined to the *o* domain, the former progresses directly to the *e* territory, with its final formant position just about as in a (ke).

A number of glide segments with onset in the *o* domain fall into four groups with termini in or approximately in the *a*, *e*, and *i* domains. These are: (1) a group which falls from *o* to *a*, at around 500 × 900 or 1000 c.p.s., with a typical duration range of 12 to 16 centiseconds; (2) a group with a duration range about as in (1) which fall and front from *o* to *e*, ending at around 600–900 × 1400–1800 c.p.s.; (3) a group of relatively brief segments, about 10 centiseconds or less, which rise and front from *o* to a high and relatively front area, about 400–500 × 1700–2000 c.p.s.; and (4) a group of relatively long segments, approximately 18 to 24 centiseconds in duration, which front, through the *e* domain and then rise in the *i* domain, terminating at around 450 × 2600 c.p.s. Group (3) are difficult to trace, and the second formant is always vague, perhaps because of its rapid transition from low to high frequencies. Group (4) is obviously more complex than the other three, apparently a combination of (2) and a rising glide as in **1.3.2.**

The *a* and *e* domains, functioning as glide termini, are structured as in simple vowel segments. The terminus area in (3) is more centrally located than the usual *i* domain; we have not a large enough sample of this group to be sure of its limits or to attempt to locate specific consonant foci.

A second type of glide segment consists approximately of bending of formants toward and then away from a position which is relatively back (low second formant) and usually relatively high (low first formant) by comparison to the adjacent vowel maxima. Environmental influences are very apparent in the placement of intervocalic maxima in this chart. Roughly, *i* tends to condition the maximum toward relatively high and front placement, *a* toward low and central, *o* generally back, and *e* rather high and central placement. When two contrasting vowels are involved, specific location is something of a compromise. In a general way it looks as if the influence of preceding vowel may be stronger than that of following in determining second formant position (but this is uncertain).

Intervocalic *w*, then, is a glide to and away from a point in the *o* domain. The location of this point is conditioned by the nature of preceding and following vowels. In general, the period of duration in the adjacent vowel domains is relatively long, the transition to and from the *w* maximum is rapid, and duration *at* the maximum is extremely brief.

1.3.2. These paragraphs describe vocalic sequences involving transition to and/or from the *i* domain.

Phrase-initial and post-consonantic sequences progress from the *i* to the *e*, *a*, and *o* domains; the first group are by far the most frequent, especially following (k). All three of these groups of glide segments are predominantly falling and backing. From onset at approximately 400 by 2700 cycles, segments of the three groups progress to 550–800 × 2000 *e*, 800 × 1400 *a*, and 600 × 1100 cycles *o* respectively. The terminal points of these segments fall in the respective domains just about as in simple vowel segments, though it may be that the *o* domain is slightly more central, at least when influenced by labials and velars.

Segments in which vowel quality shifts to (or toward) *i* are rising and fronting glides from the *a* and *e* domains (no such segments with onset in the *o* domain have been observed). Consonant foci in the *a* domain are, apparently, about as in simple *a* spectra. Termini, however, appear to fall somewhat lower (high first formant) than in simple *i* segments.

The second group, with onset in the *e* domain, are frequent and occur in a variety of environments; we can therefore look more closely at the patterning of segments of this type. These segments are relatively long—10 centiseconds and longer—fronting glides which, as a group, cover most of the *e* and *i* territories (delimited above). The extremes of the area covered by this glide are, for the first formant, 400–700 cycles, for the second, 1800–2700 cycles. All segments have the second formant at onset lower than 2300 cycles (that is, within the *e* area); all have the second formant at terminus above 2200 cycles (within the *i* area). Like *i*, these segments are typically fronting and rising, the main difference being in the more central onset (lower initial formant 2) and sharper second formant rise of the glide.

A chart showing onset areas as conditioned by specific consonants is quite similar in layout to the *e* domain, though somewhat more compacted, with more consonant foci 100–200 cycles higher in the second formant measurement, and with a narrower first formant range. A chart showing termini occupies more or less all of the *i* territory, and is similar in general plan (except, possibly, for the location of specific foci, notably (n) and (l)). However, the second formant range is wider (reaching as low as 2200 cycles), and most of the consonant foci are located slightly more centrally than in the *i* domain. Thus, while (ey) is a glide which rises from well within the *e* domain to a terminus in or verging on the *i* domain, what one might call the *e*-phase of the glide is a relatively high and front *e*, and the *i* portion may be a relatively central *i*.

Subject to the influence of consonant environment, *ey* segments have falling first and rising second formants, progressing directly from onset to terminus positions with little bending. Especially long segments, say 16 centiseconds and longer (e.g. n-t, n-n) differ in progressing to a position even more front than, and bending back to, terminus position. Longer duration, then, would correlate with a center of gravity further forward than that of a shorter segment (and, perhaps, with greater auditory similarity to *i*).

Sequences of the third type are basically characterized by rapid movement to and away from a point or maximum in the *i* domain; however, when one of the vowels involved is *i*, a definite maximum may not be clearly present (as with *o* in *w*-glides, see above). The relationship between environment and placement of the *y* maximum

is fairly obvious: *i* conditions a high second formant, low first formant; *o* a relatively low second formant; *a* a high first formant; etc. The range covered by this sample of maximal points corresponds almost exactly with the *i* nuclear area.

In complex vocalic sequences containing *y*, the most consistent feature of the *y* maximum is a relatively low first formant position. Indeed, in some of the glides involving front vowels, e.g. *iye*, the second formant position may shift relatively little, and its highest position may not apparently correspond to the *y* phase of the segment. In all environments, however, a relatively low first formant seems to be characteristic of the *y* maximum. In all environments but those containing *i*, relatively high second formant is also typical.

Rapidity of formant shifting, as on the *w* glides, is characteristic in transition to the *o* and *a*, sometimes to the *e* domains. However, when the sequence stays within the high and front area, the territory to be covered is small and movement of formants is more regular over the whole segment.[15]

[15] [The editing of this paper was done by John Yegerlehner, CFV]

AN OSAGE GRAPHEMIC EXPERIMENT[1]

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0. Introduction
1. Word list
2. Osage phonemes and their graphic rendition
3. Analytic preliminaries
4. The "Bighorse Orthography"
5. Summary

0. Robert Bighorse, an Osage Indian, was my informant in the summer of 1951, first in his home town of Hominy, Okla., and later at Ann Arbor, Mich., where he served as an informant in a Field Methods course during the University of Michigan summer session. When I began working with Mr. Bighorse, he had not used Osage as a normal medium of conversation for nearly thirty years; while his command of the structural details of the language seemed unimpaired, his control of the lexicon was affected by lapses of memory during the initial stages of our work. Bighorse sought to remedy this temporary deficiency by writing the 'forgotten' word down in English; seeing the written form, he claimed, would help him recall the proper Osage equivalent. His success with this type of what might be termed 'mnemonic therapy' was rather startling. He would take a list of such forms—which he referred to as his homework—to his room and would emerge some time later with the Osage equivalents written out. In this manner Bighorse not only managed to reactivate his Osage vocabulary; he also, quite unwittingly, created an Osage orthography. The list of forms which he wrote down might have been larger, had it not been for the fact that his peculiar method and continued daily eliciting improved his memory to point the where it became unnecessary to write forms down. After Bighorse's unexpected death on July 22, 1951, his notes, consisting largely of the afore-mentioned word lists, were turned over to me by his wife.

An analysis of the psychological mechanisms involved in using written forms of a second language to recall the spoken forms of one's native language is beyond the writer's competence. Hence, this paper merely presents Bighorse's word list, followed by an analysis and discussion of his graphemic system.

1. The original word list consisted of about 150 entries, mostly in pencil, written in an ordinary spiral-backed notebook. The entries were scattered throughout the notebook, which was also used for various notes and jottings not connected with the present paper. After elimination of duplications and a few totally illegible forms, the corpus consists of 115 different entries (including alternate spellings) which are listed below, together with the Osage phonemic transcription (enclosed in diagonals) and the meaning of each entry.

ah-who = /ahú/ *wing, arm*; pa-sue = /pásu/ *testicle*; pa-sue = /pasú/ *to cut*; coo-chey = /kúce/ *to shoot*; wa-lus-kah, wa-Lus-kah = /walúška/ *bug*; my-pueh, my-Pueh = /mąxpú/ *cloud*; wa-skoo = /waskú/ *sweet*; ne-such = /nižú/ *rain*; my-who-spa = /mąhúspe/ *spade*; thy-stue = /ðaštú/ *to bite*; ne-skoo = /niskú/ *salt*; owe-shay = /úže/ *vagina*; o-zoo = /ožú/ *to pour*; pa-whooh = /pahú/ *snow*; nah-new-who = /nąnúhu/ *tobacco*; wa-thoo-shay = /waðúže/ *to wash*; sue-kah = /súka/ *chicken*; zo-thay = /žúce/ *red*; my-choo, ma-shae = /mąšą/ *feather*; E-

[1] A shorter and somewhat different version of this paper was read at the annual meeting of the Linguistic Society of America in December 1951.

lon-chay, E-Lon-Chey = /i̧ǫ́že/ *cat*; why-lo-bry = /walǫ́bra/ *to eat*; a-na-kooh = /ánąkʔó/ *to hear*; me-oo-pa = /míǫpa/ *sun, moon*; kaw = /kʔǫ́/ *to play ball*; why-mo = /wamǫ́/ *thief*; home-pa = /hǫ́pe/ *shoe*; no-pah-he = /nǫpéhi/ *to be hungry*; ho-brenk-ka, hoo-brenka = /hǫ́bri̧ke/ *beans*; shonka, shoonka = /šǫ́ke/ *dog*; o-hoe = /óho/ *dog's bark*; o-kooh-jay = /okʔóce/ *hole*; wa-hoo-ta = /wahóta/ *gun*; wa-pooh-kaah = /waphókʔe/ *to hit*; kooh-jay = /kóce/ *past* (adv.); pa-solee = /pasóli/ *Hominy, Okla.*; o-my-E-kay, oh-mya-kaa, oh-myE-kaa = /omą́ike/ *year*; wa-hoe-cha = /wahóšča/ *little*; joh-pa = /cópa/ *short*; ma-kay = /mąke/ *chest, breast*; zooah-they, zooah-thay = /žącʔé/ *log*; we-tonka = /witąke/ *sister*; na-ka = /nąke/ *to run*; kaa-sa-kah = /kʔą́sake/ *fast*; lo-they, la-they = /lą́ðe/ *big*; ho-pa = /hąpá/ *day*; ma-cheek-kay = /mą́šci̧ke/ *rabbit*; wa-la-za, wa-la-jay = /waléze/ *letter, paper*; he-thy = /hiðá/ *to swim*; owe-shay-why-mo = /úže wamǫ́/ *lizard*; bry-kah = /brákʔa/ *flat*; ta-na-kah = /tanáka/ *paper*; jah-kaw = /céska/ *cow*; pa-kaah = /páxe/ *I make it*; ta-kaa = /také/ *to fight*; ne-jaah = /nicé/ *bucket*; shonka-la-they = /šǫ́ke lą́ðe/ *big dog*; sta... = /šcé/ *you went*; ki-see-ta = /kasíi̧te/ *yesterday*; ta-see-kah = /tasi̧ke/ *tail*; see-a-chay = /si̧ce/ *tail*; she-me-chay, she-me-chey = /šími̧že/ *girl*; ah-zee = /áži̧/ *bed*; ma-heh = /mąhí/ *grass*; lee-tha-koa = /li̧ka/ *to sit*; E-spa = /i̧spe/ *ax*; my-yeeh = /mą́i̧/ *ground*; ta-leeh = /tali̧/ *to burn*; en-chay = /ni̧kše/ *you are*; Ee-sty = /ištá/ *eye*; e-ha-kee-koo-la = /íha kikúle/ *kiss*; E-kah = /íxa/ *to laugh*; we-tah = /wíta/ *mine* (pron.); thee-kaah = /ðikʔé/ *to dig*; gee-chay = /cíze/ *door*; ne-keeh = /níxi/ *waterfall*; jeeah, jeah, chee = /cí/ *house*; pakooh-ja, pa-kooh-ja = /paxóce/ *ear*; Eh-jah = /i̧ce/ *face*; toh-jay = /tóce/ *throat*; ja-zchay, ja-zchey = /céze/ *stomach*; cha-pa = /cápa/ *little*; ta-thay = /tacé/ *wind*; pa-they = /pacé/ *boat*; jay-kayh = /céke/ *bucket*; cho-pa = /cópa/ *short*; Sha-kah = /žéka/ *leg*; joah = /žą́/ *wood*; na-zeah = /nąží/ *to stand*; wi-Chee-KAY = /wižíke/ *friends*; zochollee = /žącóli/ *Grayhorse, Okla.*; zee = /zi/ *yellow*; wa-thee-kee, wa-thee-shee = /waðíški/ *to wash*; thy-pa = /ðapá/ *to bite*; jeah-lo-they = /cí lą́ðe/ *big house*; kaw-KAAH = /káxe/ *to make*; why-mo-sthay = /wamǫ́šte/ *thief*; chi-kah = /šáke/ *hand*.

2.1. Phonemic analysis of Osage yields the following phonemic inventory:

(1) Consonants, (a) single segment: p, t, c, k, s, š, x, h, ð, z, ž, m, n, l, w; (b) two segment: pʔ, cʔ, kʔ, br.

(2) Vowels, (a) oral: i, e, a, o, u; (b) nasal: i̧, ą, ǫ.

(3) Prosodic; stress: ′; syllabic juncture: #.[2]

2.2. Bighorse's graphemic experiment deals with this phonemic system in an apparently highly unsystematic manner, representing a few phonemes consistently by the same graph, while rendering most of them by a staggering array of different variants. In giving a breakdown of his treatment, below, we enclose phonemes in diagonals, graphs in parentheses ( ).

/p/:(p)

/t/:(t)

/c/:(j, ch, th, g); the latter occurs only once, in (gee-chay) cíže *door*. The cluster /šc/ is normally rendered by (ch), as in (ma-cheek-kay) mą́šci̧ke *rabbit*; however, there is one instance of (st) in (sta) šcé *you went*. As will be seen below (**4.1.**), most of the graphs used to write the phoneme /c/ are allographs of one grapheme used to write a considerable number of sibilant phonemes.

/k/:(k, c), but we have only one instance of (c), in (coo-chey), kúce *to shoot*.

/s/:(s) is used consistently; however,

[2] This analysis differs from an earlier one in that /ʔ/ and nasality are analyzed as components rather than separate phonemes; otherwise, the earlier analysis stands unchanged. Cf. Osage I, IJAL 18.63–68 (1952).

there is some overlap, since this graph is also used for some other sibilant phonemes.

/š/:(sh, ch, s); the latter appears in clusters /šk/ and /št/.

/x/:(k), but /x/ is not written in the cluster /xp/.

/h/:(h, wh); (wh) appears in forms which show the influence of the English graphemic pattern. The phoneme /h/ is not written, when it is the second element of the clusters /ph/, /th/, /kh/.

/ð/:(th)

/ž/:(z, j, ch, zch); the significance of the latter—a (ch) preceded by a smaller raised (z)—can not be ascertained. It may simply be an afterthought on the part of the informant, possibly an attempt at greater phonetic accuracy.

/ǯ/:(z, sh, ch, j, s).

/m/, /n/:(m) and (n) are used consistently.

/l/:(l), with one instance of (ll) in (zochollee) žącóli *Grayhorse, Okla.*

/w/:(w) is the normal graph, but (wh) appears in forms show English pattern influence.

/kʔ/:(k).

/pʔ/:does not appear in the corpus.

/cʔ/:is rendered by (th) without exception.

/br/:(br).

By far the greatest variety appears in graphs used to write the vowels, as listed below.

/i/:(e, E, Ee, ee, eeh, eah, eeah, i); the last appears only once, in (wi-Chee-KAY), wiǯ̨ke *friends.*

/e/:(a, ah, ay, ayh, ey, aa, aah).

/a/:(a, aah, ah, aw, i, y); the possible reasons for the relatively frequent occurrence of the last two graphs will be discussed in section **3.1.** below.

/o/:(o, oe, oh, oo, ooh).

/u/:(o, oo, ooh, owe, u, ue, ueh, ew).

/į/:(e, E, ee, eeh, eh, eah, en); (en) appears only before /k/, reflecting the phonetic sequence [ɪŋ] before that consonant. In general, it may be said that Bighorse did not clearly distinguish between oral and nasal vowel phonemes, although, as will be seen below, he apparently associated nasal /ą/ with oral /o/ rather than with oral /a/. Our analysis does not reveal why (tha) appears in (lee-tha-koa), lį̄ka *to sit.*

/ą/: (a, ah, y, ae, o, on, ooah).

/ǫ/:(aw, o, oo, on, oon, ome, ooh; (on) and (oon) appear in two versions of the same form (shonka, shoonka), šǫ́ke *dog.* (ome) appears before /p/ only.

/′/:Bighorse did not write stress; from time to time portions of a form appear in capital letters, but they do not seem to correlate with stress. As a matter of fact, if any significance can be attached to the use of capital letters in the data, it would be the fact that a particular sequence caused the informant more difficulty than others. Since this is no more than a conjecture, it seems safe to analyze capitals as free variants of the corresponding small letters.

/#/:syllabic juncture was marked by Bighorse by a dash (-) between syllables only. However, since there is some doubt that he heard this juncture as a phoneme—in the same sense in which he heard segmental phonemes—the possible significance of (-) will be discussed in **3.2.** below.[3]

As the above breakdown shows, Bighorse's orthography is not phonemic; nor is it systematic in any strict sense of the term. Moreover, there are two major areas of inconsistency: his rendition of the consonants commonly known as sibilants; and his handling of the entire vowel system.

3.0. In analyzing the Bighorse orthography the following factors will have to be taken into consideration: (1) the informant was literate in English; (2) he had a rather good ear and deliberately tried to make his graphemics come close to the phonetic—though not the phonemic—realities of Osage;

[3] For a discussion of syllabic juncture, see Osage I, loc. cit., section **4.2.**

(3) he was partly aided and partly thwarted in this attempt by his knowledge of English orthography; being a good speller in English made him a very inferior speller in Osage; (4) he had very definite and naive notions about the 'nature' of Indian languages and about the proper way of reducing them to writing. In holding these ideas he was not very different from most of his contemporaries in the area in which he lived.

3.1. Little need be said about the informant's literacy in English. The very existence of the notebook testifies to the fact that writing was not a task he feared or shirked. His handwriting was not that of a man who does a great deal of writing, but he was fluent enough. The notebook contained a good deal besides our present corpus, and during his stay in Ann Arbor he wrote several letters to relatives and friends in Oklahoma. His spelling was quite good, in the sense that there were very few mistakes in his written English.

There is ample evidence to show that Bighorse was what might be termed 'sound-conscious'. For example, in rendering the Osage syllables /ðа/ and /ma/ by the combinations (thy) and (my) respectively, he showed an awareness of the phonemic similarity of the Osage syllables with his own Oklahoma pronunciation of the English morphemes *my* and *thy*. With the latter he must have been familiar since his Sunday School days (e.g., 'hallowed be *thy* name'). In his transcription of hǫ́pe *shoe* as (home-pa) he shows his striving for phonetic accuracy, since the sequence /ǫp/ is phonetically realized in Osage as [õmp]. As in the case of (my) and (thy), his transcription gravitates toward the nearest English spelling known to him.

This dependence on English orthographic models, which appears obvious even upon casual inspection of the corpus, may well have been a major cause of the lack of systematization evident in the Bighorse orthography. As an illustration we list here those sequences—taken from the corpus—which are recognizable as English 'graphemic words'. Occurrence of such a graphemic word in the corpus does not, of course, prove that it constituted a model for the informant. It does, however, represent at least a potential determining pattern.

ah, who, sue, coo, my, thy, owe, shay, zoo, new, choo (as in 'choo-choo'), *me, kaw, home, he, hoe, kay, jay, they, we, oh, cheek, see, she, sty, thee, gee, thee.*

If we accept, at least in theory, the possibility that forms such as these had a determining influence on Bighorse's transcription, the multiplicity of his graphemic solutions for a given Osage phonemic sequence—especially transcriptions of vowels—would be explained, at least in part. The application of English orthographic practice to the transcription of other languages yields notoriously poor results.

3.2. Some of the features of the Bighorse orthography seem to be the result of certain ideas—common to the average citizen, both in Oklahoma and elsewhere—about the characteristics of Indian (and other 'primitive') languages. The belief in the 'monosyllabic nature' of Indian languages is very widespread; Bighorse shared it with most of his contemporaries in northeastern Oklahoma. His use of the dash (-) to indicate syllabic juncture undoubtedly reflects this belief. It follows the popular idea that the proper way to write Indian languages is by separating syllables by a dash. One of the streets in Pawhuska, Okla., is named Ki-He-Kah Avenue. Since this street name is a transliteration of Osage /kahíke/, it appears obvious that Bighorse was at least in part working on the basis of such models. Moreover, there seems little doubt that some of his vowel +h graphs (e.g., ah, ayh, eeh, eh) have their origin in the frequent practice of transliterating syllable final vowels as vowel + h. To the linguistically naive, syllabic dashes and a generous sprinkling of h in syllabic final position seems to be the standard equipment of a properly primitive language.

4.0. In the following paragraphs we present an analysis of the Bighorse graphemic system. Graphemes are enclosed in parentheses ( ), allographs appear in *italics*. Where discussion or explanation is necessary, it follows the listing of the graphemes and the phonemes which they represent. We use the colon (:) to symbolize the phrase *represents* or *stands for*; thus, (h)*h*: /h/ is to be read: the grapheme (h) with the single allograph *h* represents the Osage phoneme /h/.

4.1. There are relatively few graphemes with monophonemic reference in the Bighorse orthography. (m)*m*: /m/, (n)*n*: /n/, (br)*br*: /br/, (w)*w*: /w/, (h)*h*: /h/, (l)*l*, *ll*: /l/, (ay) *ay ayh*, *ey*: /e/, (u)*u*, *ue*, *ueh*, *ew*, *owe*: /u/, (-)-: /$\#$/ between syllables. The vowel phonemes /e/ and /u/, as well as the consonants /w/ and /h/ have additional graphemic representation, which is listed below. However, the graphemes (w), (h), (ay) and (u) represent single phonemes and are therefore included in the above group.

A few graphemes in the system represent two phonemes each. (wh)*wh*: /w, h/ in forms which show possible influence of English orthographic practice (see **3.1.** above). (t)*t*: /t, c/, but there is only one instance of (t) representing /c/, (sta): *šcé you went*. (p)*p*: /p, pʔ/ and, in one instance, the cluster /ph/. (e)*e*, *ee*, *eh*, *eeh*, *eah*, *eeah*, *en*: /i, į/; this overlap is easily explained by the fact that the informant did not distinguish oral from nasal vowels. (i)*i*: /i, a/, but there is only one instance of (i): /i/, (wi-Chee-KAY): wiž[ke *friends*.

The remaining graphemes of the Bighorse orthography all have polyphonemic reference; moreover, there is a good deal of overlap in this group. (k)*k*, *c*: /k, kʔ, x/; there is some evidence to the effect that the velar fricative caused the informant a good deal of trouble, and that he was puzzled by this 'k, which isn't quite a k.' (th)*th*: /ð, c, cʔ/; phoneme /ð/ is always represented by (th), but the inclusion of /c/ and /cʔ/ under this grapheme is puzzling. Most probably it illustrates the difficulty the informant encountered in writing the sibilant consonants. This difficulty is further illustrated by the following graphemic configuration. (s)*g*, *j*, *s*, *z*, *ch*, *sh*, *zch*: /c, s, z, š, ž/. The criterion for assigning all of the above graphs to the same grapheme is the virtual absence of any kind of system in writing any and all of the sibilant phonemes. The breakdown is as follows: *g* represents only /c/; *j* represents /c, z, ž/; *ch* stands for /c, z, š, ž/; *z* stands for /z, ž/; and *s* stands for /s, š, ž/. We associate the apparent lack of systematization with the concept of free variation and hence assign all of the above graphs to one grapheme, arbitrarily called (s), the 'sibilant' grapheme. The overlap with (th) has already been noted above; inclusion of *th* under (s) seems unrealistic in view of our basic assumption that totally different graphic symbols should be assigned to different graphemes, if phonemic differences are involved. This assumption also forms the main criterion for the analysis of some of the vowel graphemes listed below.

4.2. (a)*a*, *aa*, *ah*, *aah*, *ae*, *ooah*, *y:* /a, ą, e/. (o)*o*, *oe*, *oh*, *oo*, *ooh*, *on*, *ome*, *oon*, *aw:* /a, ą, o, ǫ, u/. The criterion for inclusion of these graphs either under (a) or under (o) is again the apparent free variation. Moreover, analysis as two graphemes—rather than one—is made on the basis of the fact that some of the graphs here assigned to (a) were used by the informant to represent the front vowel /e/, while the graphs assigned to (o), aside from representing /a/ and /ą/, also served to symbolize the back vowels /o/, /ǫ/ and /u/. Undoubtedly, the fact that the informant did not make a graphic distinction between oral and nasal vowels, while at the same time he was having difficulties devising orthographic distinction for nasal /ą/ and /ǫ/, was a contributing factor in his quite unsystematic writing of /a/ and /ą/.

4.3. To summarize the analysis we list here the Bighorse graphemic system, ar-

ranged in alphabetical order: a, ay, br, e, h, i, k, l, m, n, o, p, s, t, th, u, w, wh, -.

5. In his efforts to write his native language Robert Bighorse must be said to have failed. The sum total of his orthographic experiments is a far cry from being a modern *Ormulum*. It falls short of the system devised by the Connecticut blacksmith John Bate.[4] A reading of the *Ormulum* or of John Bate's account book enables us to recognize the significant features of the phonemic systems represented in each. A reading of Bighorse's word lists reveals nothing, unless the reader happens to know both English and Osage. The Bighorse orthography is no more than an interesting failure because it is not systematic—at least not recognizably systematic. Not only was the recording of every form a problem in itself, but, as the many variant spellings in the corpus show, every recurrence of a form presented an entirely new problem which had to be solved without reference to the fact that the form had already been recorded at least once. This is all the more surprising in view of the fact that the informant apparently had a 'good ear' (see **3.1.** above) and was striving for phonetic accuracy.

In trying to assess the reasons for Bighorse's failure to create a system, it could be pointed out that he did not attempt to do so. However, such an explanation would be unsatisfactory for two reasons: (1) we have no way of proving that no systematization was intended; (2) creation of an orthographic system is not necessarily contingent on deliberate intent. John Bate obviously had no intention of creating an orthography, while he taught himself how to spell. He merely wanted to be able to keep his accounts straight. Under the circumstances the consistency of his spellings is remarkable.

Two of the factors which prevented Bighorse from creating an even slightly systematic orthography—his complete dependence on English patterns of spelling and his ideas about the nature of Indian languages—have already been discussed (**3.2.** above). A further decisive factor may have been the fact that Bighorse not only did not intend to create an orthography, but that he was not even interested in writing Osage. As was pointed out in **1.** above the entire procedure was to him no more than a device to help him recall certain temporarily forgotten or submerged features of his native language. Since it served this purpose, he was apparently content to leave it at that. At no time did he really try to 'write in Osage'; nor did he feel that literacy in Osage was necessarily a desirable thing. He was much too aware of the fact that his native language had all but ceased to be an effective means of communication for most members of his tribe.

The evidence presented in this paper suggests one final observation. The psychological reality of phonemes notwithstanding, it may be entirely impossible for a linguistically untrained person to render the phonemic system of his language in a systematic fashion, if his orthographic model is unsuitable. The writer is reminded of a question he was once asked by a West African teacher attending a conference on vernacular orthographies: "May we assume that English orthography is the best and most efficient orthography available anywhere today?" Robert Bighorse's experiment would seem to provide a properly emphatic answer.

[4] Cf. H. Whitehall, "The Orthography of John Bate of Sharon, Connecticut (1700–1784)", American Speech vol. 22, no. 1, pt. 2 (1947).

ISLAND CARIB IV: SYNTACTIC NOTES, TEXTS[1]

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DOMINICA, BRITISH WEST INDIES

18. Introduction to syntactic notes
19. Phrasal structure
20. Sentence structure
21. Texts

18. Before attempting to present in outline what appear from my texts as the salient features of this dialect's syntax, I may state briefly how I intend to use the terms WORD, PHRASE, CLAUSE and SENTENCE.

By WORD will be meant, in general, a morphemic word, whether completely free (one which may, together with an appropriate intonation, constitute an utterance), such as náibuga *I'm going* or áueretu (*served right is she*) *it serves her right*, or clausally or phrasally bound, such as ma (a negative particle usually replacing máma in questions and rhetorical questions when the affirmative is assumed) in lubuídų barána ma *isn't the sea beautiful?* or má-buga nį̀a-bų *didn't I tell thee?* Those of the former type are taken to be single words when analysis shows them to contain, besides a root morpheme, bound or free, only recognized affixes in regular distribution with this morpheme. Those of the latter type are assumed to be words (rather than affixes or bound roots) when, as in the case of ma, they show both considerable mobility within the clause or sentence and freedom in their association with other forms belonging to different classes. Nor shall I hesitate to call such an enclitic as bai in fú-bai *blow it* (b- *2nd person sg.*, -a- *conjunctive auxiliary verb theme*, -i *3rd person sg. masculine*) a word; since it should be clear from what has been said under section **3** that person-marker prefixes always, and person-marker suffixes in the vast majority of cases (the only exceptions being locators or verbs derived from locators), mark respectively the beginning and the end of such words as contain them. So, according to my data, a word may be unstressed (as in this last example), or contain one or more stresses of equal weight (arí́ha *to see*, narí́hubadíbu *I shall see thee*).

Exceptionally, I shall consider as words compounds whose members cannot be separated by any affixial or other morpheme, and whose stress-patterns and/or morpheme-sequences differ from those of syntactic constructions containing them. So, mabádiga *beeswax*, containing mába *bee*(*s*) and ídiga *excrement*, will be considered as a word in contradistinction to the phrase hádiga mába (*their-excrement bees*) *bees' excrement*. Such compounds are rather few in my data (v, under **12.3**).

By WORD-GROUP or PHRASE will be meant two or more words that are grammatically replaceable by—and therefore functionally equivalent to—one. So, súądą tadóga hjáru toa sábų (PVNLN) *this woman often makes soap* and sų́ lúiari kátai erę́guati (PNLV) *all sorts of things were said* may be called verbal phrases because they are replaceable by verbs, tadógai *she makes it*, erę́guati *it was said*, as the actor-action and undergoer-action constructions of English are not. Similarly, the equational sentences inároni lí́ra (NL, *truth that*) *that's the truth*, hagía niéį (LL, *it-is-they there*) *there they are*, and gumúgua barúru (PN, *at-an-end-stative plantain*) *plantains are finished* are replaceable, respectively, by a noun binárǫ (*thy truth*) *thou'rt right*, or *thou'rt telling the truth*, a locator, aniáhaį *there they are*, and the particle gumúgua itself, and thus constitute nominal, locative, and adjectival phrases. A phrase may itself form part of a larger phrase

[1] For Island Carib III see IJAL 22.138–50 (1956); for II see IJAL 22.1–44 (1956); for I see IJAL 21.233–41 (1955).

of the same or of a different type. So, the nominal phrase murúsu agólei (NN) (*a*) *bit* (*of*) *oil* is one member of a coordinative phrase consisting of three clauses: murúsu agólei, putása, dígu lúma ámu kátai *a bit of oil, potash, indigo and* (lit. *it-with*) *other thing*(*s*). Exocentric constructions are for the most part confined to subordinate clauses (thus, either a verbal or a nominal phrase which constitutes a subordinate clause may, as such, have adverbial function in the sentence); but some phrasal constructions are themselves exocentric; so, sų kátai *everything* and ámu kátai *other things* or *another thing*) have nominal function although they consist of a particle, sų or amu followed by a locator, kátai *what's-masc.-it*; while niúru tugúia (also PL) *she sat down* has verbal function, being replaceable by the verb tániu(ru)ra, which has the same meaning. ábą ábą *one by one*, or *one here and there*, bíama bíama *two by two*, etc. are distributive.

A SENTENCE, as the smallest unit of discourse, may be defined as consisting of one or more words containing at least one loud stress, the last of which is followed by a pause and characterized by one of certain patterns of intonation. Five of these have been recognized as distinguishing informative, mandatory (request or command), two interrogative, and exclamatory types of sentence; a sixth, also occurring before pause, as distinguishing a clause from a sentence; (v. the last paragraph under **1.1** of my Phonemes of the Hopkins dialect of Island Carib, in **IJAL** 21.233–241, 1955). Regrettably, this part of the investigation was not carried out systematically; and since intonational variants of one and the same type of sentence undoubtedly occur, the characteristics noted are probably much too crude to serve as criteria. However, it may be of some help to say that the only striking deviations, in this respect, from my own (British) English usage concern the exclamatory type (usually consisting of one and rarely if ever of more than two words) with long-drawn rising tone, and the yes-or-no type of question, which ends—at least often—on a level (sustained) tone.

19. Most attributive endocentric phrases, with the notable exception of those constituted by an auxiliary verb or verbal noun (which always follow their complements), have the structure: HEAD + ATTRIBUTE. So, (VV) náibuga áluahaų *I'm-going to-look-for-her*, básiąrubai adóga *thou'lt-be-unable-it to-do* (i.e., *to do it*, the pronominal goal -i *it* being included in the head), báiba adógai *go do-it*, káimą aríhaų *let's-go* (*and*) *see-her*; (VN): badóguba uasábute *thou'lt-make our-soap*, mabusętina hadógoni *I-don't-want their-doing-it* (= *them to do it*); (VL): arúmuga hagía (*sleep it-is-they*) *they slept* nagąba abúhaį (nege S.B.) *I-hear you-*(*were*)*-there* (*quotative at-S.B.*); (VP): uadímureháią uríba *we-are-talking ill*, maríhigidína buga (*I'm-still-without-seeing past-tense*) *I'd never before seen*; (NN): tanícigu hįáru (*her-wisdom woman*) *woman's wisdom*, larúga bináfi (*its-dawn morning*) *the break of day*; (NV): sęsu bícigubai (nų́) *money that-you-gave* (*to-me*), tídi áluahai *her-going to-look-for-him*, mútu gáganiti (*person he-has-enemy*) *a man with enemies*, bigáburi uríbati (*thy-behaviour it-is-bad*) *thy bad behaviour* (contrast: uríbati bigáburi *thy behaviour is bad*); (NL): óma lea *this path*, uátu líra *that fire*, guríara tugúra *yon dugout*; (NP): mútu ítara (*person such*) *such people* or *such a person*, uéiu mé *some day* (uéie *sun or day*, me *particle of future tense*); (LL): inúhaį iára *she/it is there* (lit. *it-is-non-demonstrative-there demonstrative-there*; (LV): toa iábaų *she fem.-who-is-here*; (LN) lea amúleię *he* (*the*)*-younger-brother* (contrast: amúleię lea *this younger brother*), iníte N (*he-is-coming N*) *N is coming*; (LP): ligíra buga (*yon-masc past-tense*) *the other day*, líte me (*coming-masc. future-tense*) *soon.*

On the other hand, some attributive endocentric phrases have the structure: ATTRIBUTE + HEAD. This seems to be true of most—if not all—those which begin with a

particle; so, (PP): ká ámu (uogóri) *what other (man)*; (PV): súądą tadóga (*often she-makes*) *she often makes*; (PN): binádo hábię (*former their-home*) *their old home*; (PL): ni nugúia *nor I*; and see now section **16** above for further examples. Moreover, while action-actor-goal (tadóga hjáru toa sábų *she-makes woman this soap*) and action-undergoer (tarĺhuaia uóri toa *she-was-seen-again woman this*) represent the normal word-order in phrases of this type (even when nominalized: see next paragraph but one), we also find similar phrases in which the actor or undergoer is brought to the fore, as in: lúbuią adarásarubádina *its-material will-hinder-me*, ábą-iebé caparíta agólei tadóguba tisábute *one even* (= *even one*) *gill* (*of*) *oil it-will-make its-soap*, sų lúiari kátai erę́guati *every its-sort* (*of*) *thing it-was-said* (*all sorts of things were said*). When this word-order is followed, the verb is unmarked for the person of the subject's centre if this immediately precedes, as in the first example; but if it does not, as in the second example, the verb is marked in cross-reference to it (so, the t- of tadóguba refers to caparíta *gill*, a term borrowed from local Sp. chaparita). (Occasionally, though very rarely so far as my data are concerned, the verb may be likewise left unmarked for the person of an immediately following actor; so, áhuia hítao tuáigię *pour blood*—that is, *blood poured—from off it*.) On the other hand, there can be no cross-reference in those LV and VL constructions in which a locator in -g(u)ia (406) functions as pronominal subject, indifferently preceding or following the verb as in tugúia erę́ga (*it-is-she say*) or erę́ga tugúia; and which are functionally equivalent to a finite verb such as terę́ga *she said*, differing from the latter stylistically in that they are more emphatic or declamatory, and therefore encountered more frequently in narrative than in conversation.

To be clearly distinguished from this latter type of verbal phrase is the locative LN phrase in which a locator in -g(u)ia is followed by a verbal or other noun, as in ligía lebéluru *then he came in*, ligía terę́gu *then she said*, or *this is what she said*, but more literally, *it-is-this/then-therefore/thus his-entering, her-saying, etc.* So compare ligía erę́ga *it-is-he said* with ligía terę́gu lúmari lų́ (*it-is-this her-saying his-consort to him*) *this is what his wife said to him*, and ligía áibuga *it-is-he walked* with ligía máha nubái náibugu (lídagię lagóburi óma) *that's why I won't walk* (*by way of disused paths*), but more literally *it-is-thus unwilling that-I-be* (*for*) *my-walking, etc.* In the last example, ligía is followed by both an imperfective verbal phrase (máha nubái) and a verbal noun (náibugų). It may also be followed by an imperfective verb alone, as in ligía tadógubai *this is what she did* (*it-is-this that-she-did*), in reference to an activity already mentioned; whereas my data, though insufficient for proof, indicate that the LN form, ligía tadógo (*it-is-this/then/therefore her-doing*) could refer only to an activity about to be mentioned. It can hardly be doubted that these constructions are rightly interpreted as locative phrases when we find the locator ligía alone fulfilling a similar function and itself constituting a subordinate clause, as in: ligía, dą́ le hadógo mútu urĺbati bų́, madĺhari bá, láguiuba háu *so, when people do evil to thee, don't fear, it will turn back on them.*

The borrowed expressions dą (Fr. temps), le (Fr. l'heure), and dą le are often translatable by *when*. Although the first may be referred to pronominally (dą ligía *that time*), neither ever bears pronominal reference; yet both (separately or together) function as nouns, so that the clause translated *when people do evil to thee* might be more closely rendered: *at-the-time* (*of*) *their-doing people it-is-bad to-thee*. So also: le ladáraguni *at-the-time* (*of*) *his-opening-it* = *when he opened it*. Occasionally, however, one of these expressions is employed before a verbal form as in: le tarĺhibali *when she saw him* and dą le bagóriahabái *at-the-time that-you-gave-birth*

(both imperfective), darí me dą le hiládina *until future-tense time when I-have-died = until after I have died* (perfective).

Moreover, subordinate clauses may be marked as such by containing, instead of a verb, a verbal noun (or, as we shall see below, a conjunctive verbal phrase). So: lacóloro, terę́ga dunúru toa lú ... *his-arrival, she-say bird this to-him ... = when he arrived, this bird said to him ...*; tanógunu tisíreste, ábą tásahą *her-taking-out-it her-scissors, and her-shearing = and taking out her scissors, she sheared*; lalíhanu, ligía lerę́gu ... *his-reading-it, it-is-this his saying ... = when he had read it, he said ...*; leréderu gunúrima leá, abą taráirų *its-stopping ball-of-thread this, and her-dismounting = (when) the ball of thread stopped, (and) she dismounted* (two possible interpretations); hacóloro, ligía herę́gu *their-arriving, it-is-this/then their-saying = when they arrived, they said.*

As in the case of the locator ligía, pronominal reference in one noun supposes a nominal referent, implicit or expressed. So, in: abą lícigu abą mílu fiádoro tų uáiriau toá lų tagóriahanįų iráhǫia ha *and he gave one thousand dollars to this old woman for her to bring up these children*, the l- of lų, itself a morphological noun, refers to the verbal noun tagóriahanįų—from the verb agóriaha *to give birth to or to bring up (children)*—in the nominal phrase, lų tagóriahanįų iráhǫią há *its-purpose her-bringing-up-them children these*. Other adverbial nouns listed under **11.31** are employed analogously to lų, so: lúmagię lacóloro *it-since his-arrival = since he arrived*, lubáragię terę́gu *it-before her-speaking = before she spoke*. A noun with the theme -uma *with* serves to coordinate two other nouns, as does túma in: hama gádoro tíbegu túma túgucu *(them-with four her-kind-collective her-with her-mother) with four of her kind and her mother*. But as clausal or sentence connective is employed the particle ábą *and, and so, and then*, which is homophonous—if not identical—with ábą *one, a(n)*, and like the latter is followed by a nominal referent; so compare: abą liáda *one (of) his leg(s)* (or *thighs*) with abą ladógoni *and so/then he did it*, in which the last word is a verbal noun, *his-doing-it*. This usage is not mentioned or illustrated by Breton, in his works on the Dominican dialect, with one possible exception: "abaa lanoúbouteya *il aurait encore plus peur*", containing his "abaa *davantage*", "lanoúboute *sa peur*", and "-ia *signifie reiteration*". This suggests that "abaa" was a different morpheme from that meaning *one*, which Breton wrote "aban", and that our abą *and* descends from the former. However, the shape of the verbs abáhoda *to add, to count*, with tensive abáhodaha *to recount (a story)*, and with which compare Breton's "abákêta *apprendre, enseigner*; abákêtaca *calculer, mesurer, marquer, peser*", makes it probable that they are related both to the numeral and to the connective; and although I have not recorded it, I believe that the phrase cited above from Breton could be translated into this dialect as abą lanúfudeia, with very much the same meaning as he gave it, paraphrase though his (or anybody else's) translation must be.

19.1. Phrases constituted by a finite auxiliary verb or verbal noun always have the structure: ATTRIBUTE + HEAD. As complement they may have an indefinite (or other) verb (aríha bai *look at him/it*, merę́ga bai *don't say/tell it*), a privative particle (merę́gu-ga bái *unless thou tell it*, but more literally, *without-telling do thou-be-it*), a locator (niéį-ba *stay there*, or *don't move*, but literally *there be*), or a particle (fú-bai *blow it*, háu-bai *eat it*, the first—but not the second—of which provides the base of an indefinite verb, áfura *to blow*). I can find no example of an ordinary noun as complement; but such may conceivably occur, since some indefinite verbs have a noun as base (so, egeléca *to lock*, from borrowed gelę *key*). The auxiliary verb in the above examples gives the persons of the actor, b- 2nd

sg., and (in all but one instance) goal, -i 3rd sg. masculine, and signifies *conjunctive mood* (-a- ~ -uma- without any relator before the pronominal suffix).

It may be recalled that the auxiliary theme -a- ~ -uma- serves both the perfective aspect and the conjunctive mood, combines with the aspect-marker -gi to form the theme of the durative auxiliary verb, and with the nominalizing suffix -NE to form that of the auxiliary verbal noun. When a pronominal goal (as well as actor) is included, the resultant auxiliaries are formally distinct; so, with 1st sg. actor and 3rd sg. feminine goal: náru (perfective), náų (conjunctive), nágiru (durative), nánu (verbal noun). The durative auxiliary does not occur without a pronominal goal; and, even without one, context, situation, intonation, separately or together, usually make it easy to distinguish perfective aspect from conjunctive mood, and the latter's imperatival from its subjunctival function, in such a sequence as: áfara bá núgucu *thou hast killed my mother*, or *kill my mother*, or subjunctive *thou kill my mother*. So far as phrases constituted by the clearly aspectual auxiliary verbs (durative, progressive, perfective, aorist, and andative) are concerned, nothing need be added to what has already been said under **7.2**; but some discussion of the auxiliary verbal noun and of the conjunctive and imperfective auxiliary verbs is necessary.

The auxiliary verbal-noun phrase apparently occurs in the same environments as those which call for a verbal noun, to which it may be an alternative, or which it may replace when, as in the case of attributive and privative particles, pronominal reference could not otherwise be expressed. So, luágu ébecu nánebu *its-concern finding-fault-with my-verbal-noun-thee* is synonymous with luágu nébecunību *its-concern my-finding-fault-with-thee*, from ébecua *to find fault with*, and both translatable by *about my finding fault with thee*; while lų marámodu tánu buái *it-for not-hiding her-verbal-noun-it thee-from* = (*hoping*) *that she does not hide it from thee* necessarily employs this phrasal construction since marámodu is a particle derived from arámoduni, a noun, from the verb arámoda *to hide*. Similarly in: lóha gię tia maríhi nánu N *long-time-perfective also it-is without-seeing my-verbal-noun-her N = it's been a long time too since I've seen N*; (most aspectual verbs, aorist and perfective in particular, call for subordinate expression of a correlated activity; cf. aorist verb plus verbal noun in: máhatių hícigu dúna lų *they-are-unwilling their-giving water to-him = they won't give him water*).

Auxiliary phrases occurring in such environments as are illustrated above are clearly—that is, formally—nominal whenever they include a pronominal goal; and I have assumed this to be so even when the latter is absent, and the auxiliary is homophonous with a conjunctive auxiliary verb, as in the case of 'la' in the following examples, which I take to be a variant of the auxiliary verbal noun lą *its/his being*, and not identical with the homophonous conjunctive auxiliary verb la *let it/him be* or *that it/he be*. So: luágu aniáhaį la *about their being there* (*it-about they-are-there its-being*), lų la hibíhini hąiúmuragúni *that they should get their wish* (*its-purpose its-being their-getting-it their-wish*), (erę́ga tugúia lų), lau tiábiba lá lubárau (*she said to him*), *that she would come to meet him*, but more literally, *say it-is-she to-him, it-concerning she-will-come its-being his-fore-to*. (The idiom *to-his-fore = to meet him* is strikingly similar, in this instance, to Fr. au devant de. However, this is no calque, as is evident from the wide range of uses to which -ubára may—and especially might—be put, today and 300 years ago; cf. halíatibu lubára húia *where-art-thou it-before rain = where did the rain catch thee?*). At the same time it may well be that I have mistaken one for the other in some cases where no pronominal goal is included. For a somewhat analogous problem concerning 'theoretical' versus 'actual' nasalization see now, under **3.2**, pp. 7–8.

The imperatival function may sometimes

be expressed, when there is no pronominal goal, by an indefinite verb marked for the person of the actor, as in báiga / háiga núma *eat (thou / ye) with me*. Otherwise a conjunctive phrase must be employed, as in háu-bai *eat it*. Moreover, while it is sometimes convenient to distinguish conjunctive phrases with 'imperatival' function from those with 'subjunctival' function, it must be remembered that, except for the prohibitive construction (v., under **7.2**, p. 27), there is no formal difference between them, and that an imperative verbal phrase in the first person singular can hardly be said to express either a request or a command; so: sé-nai *I must pour it out*, or, with appropriate intonation, *shall I pour it out?* áfaraha nábu me *let me beat thee*, and (non-auxiliary) náiba *I must go*,—with which compare báiba *go!*

Such usage leads without too abrupt a transition to others, such as that in which a conjunctive phrase accompanied by me, the particle of future tense, is potential, like our might-could-would-should phrases. So: erégа nąų me tia lú *I might tell him (of) it*, (áhaią ahámaca nuágu), gulúlu náų me múna toa háu (*if they pounce upon me*), *I could bring down this house on them*, asáluha náų me gię *I would 'salt' her too*.

The conjunctive may also express purpose or result: (ábą nege lídi lúma), arúhuda lái nege lú sų kátai (*and it seems he went with him*) *in order that he might show him everything* (lit. *show he-conjunctive-it quotative him-to every thing-masc.*); abą tacúbarų, bígubai tai liáda *and she jumped, so that she quite severed his leg* (lit. *severed-quite she-conjunctive-it his-leg*).

Occasionally the conjunctive appears to press cautious assertion: búa tái nege tidą iamádi *she enclosed it, it seems, in a basket* (lit. *enclosed she-conjunctive-it quotative it-in travel-basket*), although elsewhere the quotative, nege, is employed freely without the conjunctive.

A very common type of verbal phrase headed by a conjunctive auxiliary is that consisting of a privative particle followed by the particle ga (v. under **15.3**) and a conjunctive auxiliary verb, and to be translated by *unless (somebody does something)* or *without (doing something)*. Examples: (mebélubadíbu núbiaų) madáiri-ga bái nigánali nú (*thou'lt not come into my home*) *unless thou find my pitcher for me* (lit. *without-finding do thou-conjunctive-it my-pitcher me-for*), (lau mabúseru la laráodu) merégu-ga lái lų gorírigua (*that he didn't want to beget offspring*) *without telling the assembly of it* (lit. *without-telling do he-conjunctive-it it-to assembly*).

Only a conjunctive auxiliary may occur after a particle ending in the basal suffix -(i)na (v. under **3.2**, p. 14) to form a verbal phrase; that is to say, whenever such a particle itself denotes an activity, instead of functioning as an adverb qualifying one denoted by some other word, as is more often the case. So: ragóina lái bia lugúdi (*seizing he-conjunctive-it two his-foot*) *seizing both his feet*, (*he tied him* ...); afalaráina hamái lumálali (*following they-conjunctive-it his-voice*) *following his voice*, (*they found him* ...); and, following a clause meaning *hoping that my letter finds you O.K.*, aunabáina báų káisi me tacóloro *that thou'lt answer it as soon as it arrives* (lit. *answering thou-conjunctive-it as future-tense its-arriving*); or, following and dependent upon *the king sent letters to the town* ..., ..., íridaguáina lái-ti ka la siuámaį habái iráhoią há *announcing what it was that these children would like*, but literally, *announcing he-conjunctive-it it-is what it-be like that-they-do children these*.

Particles ending in the suffix -gi, or rather such as are found in my data, are always followed by a conjunctive auxiliary verb. This suffix, which I hesitate to identify with the durative aspect-marker (204), often seems to add to the meaning of the stem to which it is attached a nuance translatable by *nevertheless*, or *all the same*; so, with the stem fála *follow* (borrowed from English, and verbalized as afálara *to follow*), falági lái-ti

he followed him nevertheless; and with cíba *wash*, cibági hamáų-ti *they washed her all the same* (contrast aorist cíba hamútu *they washed her*). However, this does not appear to be so in the case of gáunigi *heed, notice, pay attention to*, whose stem forms the base of the aorist verb gáuniti *it is worth while* (cf. máuniti *it is not worth while*), and whose root appears to be the nominal theme -ų ~ -uni *purpose, to, for*. So: gáunigi bá *look out!* gáunigi bái bénebu *mind the doorstep!* gáunigi nái tídą iú-ląą N (lúma abą lilógo áuli uríti) *I noticed N sitting in it (with a black dog of his)*, but more literally, *notice I-conjunctive-him it-in sitting he-is N*; gáunigi lái hamúga libíama tagóriahą *he should have paid attention to the second she bore*, but more literally, *heed he-conjunctive-it should-be its-second-one her-bearing*.

A conjunctive phrase may indicate that the clause containing it is subordinate, in cases where English would employ a conjunction. Examples: húlugu lai leá, (líciga iúri lú lų lacáguragu) *when / after he had swallowed this (he gave him tobacco for him to chew)*,—lit., *swallow he-conjunctive-it this*; dagágoda lái lábuagu, ligía háidi líbirigu (*set-down he-conjunctive-it his-cooking, it-is-then their-going his-junior-collective*) *when he had set down what he was cooking, his juniors left*; madáiri táru, saráragua táų sų ubárari, ni tífe (*not-finding she-perfective-it, undoing she-conjunctive-it all bedding, no its-scrap*) *she didn't find it, undo all the bedding as she might, not a scrap of it*. This usage should be compared to that made of the verbal noun, and described in the last paragraph but one under **19** above.

As was mentioned under **16**, the particles kái and káisi (~ kási), though clearly related and having the same general meaning, *like, as (manner)*, appear not to be interchangeable—at least in some environments in which one or the other occurs. In the main, káisi has adjectival function, preceding its head in a nominal phrase, as in bugúia káisi hú, (sú buáuguaų) *thou'rt like (a) hoe, (everything toward-thyself)*, káisi me tacóloro *as future-tense its-arrival = as soon as it arrives*. But I have also recorded it before the locator toa, as in: káisi toa (fádiri lubái uogóri lea) *like this (priest that-he-is man this) = since (inasmuch as) this man is* (or *was*) *a priest*, with which it forms a locative phrase. On the other hand, kái is usually adverbial, as in kái buga tadóga *as past-tense she-do( )* (indefinite) = *as she had done (to the first)*, or else (like ligía, but unlike kaísi so far as my data are concerned) combines with the imperfective auxiliary to form a verbal phrase in a minor clause, as in: kái lubái-ti N, ... (*as that-he-is N*) *the way that N is*, ... , kái lubái násių líra, ... (*as that-it-is nation that*) *the way that 'nation' (white people) is*, ... ; with which compare ligía lubái ... (*it-is-this/then/therefore that-it-is*) *and that is why* ... However, there is a set phrase, kai lai (?) or kai lea (?) *inasmuch as*, which I have hitherto taken to be the former, conjunctive verbal phrase, rather than the latter, locative phrase, but which seems to have some analogy with káisi toa of the men's speech as above. So, perhaps, kái lea [lai?] larúgaugubái ubéu (*like this that-be-its-lighting-up sky*) *seeing that the sky was lighting up*, (with: larúgaugubái = 3 + arúga *to light up—become brilliant* + 332 + 221 + 201 + 103). On the other hand, kai lea, if that is what it is, though it may be followed by an imperfective verb (as above) does not occur in my record before an imperfective verbal phrase (as does káisi toa) but only before one constituted by an auxiliary verbal noun, as in: kái buga leá maríhi táni ligíbu (*like past-tense this not-seeing her-verbal-noun-it his-face*) *since she didn't see his face*, or: kái lea nége madógo láne hábię (*like this quotative not-doing his-verbal-noun-it at-their-home*) *since apparently he doesn't do it at their home*.

Like the conjunctive, the imperfective auxiliary may be said to have two functions, which are, in this case, future tense and subordinate respectively; but, unlike the con-

junctive, both may usually be expressed by a non-auxiliary imperfective verb, while future tense may also be expressed by the tense-particle, me. Indeed this latter function is rarely expressed by the auxiliary verb except after ída *when or how*, which has the latter meaning only when followed by an auxiliary (progressive, imperfective, or other); so: ída uabá-sa luma sábų *how shall-we-be* (*off*) *with soap?* Another example is: siá lubái-gia ... *it will be impossible* ... In what I have called its subordinate function, the imperfective auxiliary occurs most frequently after one of the locators, áhaį *if it*, ligía *it-is-this*, lea, toa *this* (*masc. & fem.*), ha *these* (*animate*), and niéį *there* (*non-demonstrative*). So: áhaį siá lubái bų *if it should be impossible for thee*, áhaį busuę bubái *if thou shouldst need it*, áhaį-ti ríca lubái (niuénedo) *if it should be right* (*my dream*), áhaį nisínu lubái *if it should be my destiny*, áhaį báibuga lubái lárigi (*if-it thou-art-going that-it-be him-after*) *if thou shouldst be going after him*, áhaį gubáirogo úa lubái (*if-it-is after-all not-there that-he-is*) *if he were not there after all*, ligía abídię tubái nų (*it-is-therefore unknown that-she-is to-me*) *that's why I don't know her*, ligía késį habái *it is for this that they are scarce*, (adóga hamái) lea lubái hadógoni (*that they might do*) *this that-it-is their-doing-it*—that is, *whatever it was that they did*, niráhǫią há lubáią (ledéuehanįų nubúgiote nú) *my-children these plural-that-it-is* (*his-granting-them my-God me-to*) = *the children that God grants me*, (peru siąti-ti lídi iráho leá) niéį lubái buga larúhuda uáiriai lea lú (*but it was impossible for this boy to go*) *there that-it-is past-tense he-show old-man this him-to*—that is, *there where the old man had shown him*, (toá lárubaų dúna) niéį lubái lagánaua leá arúmadahabái (*this-one that-is-at-its-edge of-the-river*) *there that-it-is he-dwell he who-is-cleaning* = *there where the sweeper dwelt*, niéį lubái lagúmuca urága *there that-it-is it-ends story* = *it is there that the story ends.*

It is also found in such environments as the following: (nálagodaru uóri toa) ka la uágu ibíbię habái tiráhǫią tú (*I'll ask this woman*) *why* (lit. *what it-be about*) *unknown that-they-are her-children to-her*—that is, *why she doesn't know her* (*own*) *children*; ká gia uagu madógǫ bubáli leá *why didn't you do this?*; anúra lubái gia—uél, máma-ga lúgucu *that he should run away* (anúra *to run away*)—*well, it was not his mother*; annáha iaų gía lubái buma iá (*here-I-am once-more also that-it-is with-thee here*) *and so it is that I am with thee here once more*; íta(ra)ru tubái-gia (*thus-perfective-it that-it-be*) *this being the case*—a formula frequent in narrative, with which compare: ítara liá-ti (lit. *thus it-is*) *it is so, it so happens/happened.* In le lubái liábi (*at-the-time that-it-is its-coming*) *when it is about to come*, one might see a border-line case between subordinate and future-tense functions.

However, so far as *if*-clauses are concerned, this is not a grammatical necessity, since we find also others such as: áhąbu agąba umálali *if thou hearest voices*, áhąbu nabúga, bídiba? *if I drive thee away, wilt thou go?* in which the locator in ahą- is followed only by an indefinite verb, and with which compare: áhaį báibuga lubái *if thou shouldst be going* (see above)—that is, *now*, in which the imperfective auxiliary apparently adds the nuance of actualité (in the French sense). As for ligía, we have already seen that this locator has a very similar function whether followed by a verbal noun or by an imperfective verbal phrase. No doubt the most important of this auxiliary verb's subordinate functions is that of a relative verb meaning *that, which*, or *who is somewhere or something, or does something*; and even here it may be replaced, in some cases, as by the aorist auxiliary after niéį *there* in: (lų másiąrubádibu lą́) niéį lumúti badágara (*its-purpose thou'lt-not-be-incapable its-being*) *there it-is-it thou-land-up* = *in order that you may be not incapable wherever it is that you land up*, or, when this is required by preceding pronominal reference,

by the auxiliary verbal noun, as in: lárigię ítararu tą́ (*it-after thus-perfective-it its-being*) *after this had happened*, luágu leá lą adógubali (*its-concern he/this-one its-being who-did-it*) *about him who did it*.

19.2. While the locators constitute a rather closely knit morphological class, their syntactic functions are extremely diverse; and it would seem that they occur in some phrases that must be regarded as exocentric. So, for example, kátaų búgucubaų (LV) *who-is-she fem.-who-is-thy mother?* is replaceable by the first word, and is therefore a locative phrase; but kátaų in (seméętu) kátaų túra (*it-is-good*) *thing-fem. fem.-that = that thing is good* (*of sensual perception*), which is (V)LL, is functionally equivalent to the noun iráho in iráho túra *fem.-that child*, a nominal phrase. Moreover, while kátai, kátaų, and other forms in kata- + person-marker suffix cannot be regarded as anything but locators, whatever the function that they serve, the classification of káta, which occurs in a few expressions such as ní kata *nothing, not anything*, is more doubtful, although the existence of a particle ka *what or who* and of such locators as iágota *over there*, lígita *he over there*, inígita *he is over there* might permit us to isolate a hitherto unidentified suffix -ta. Similarly, we have already seen something of the protean nature of ligía *it is he / this / then / therefore, etc.*, which may occur by itself in a subordinate clause (v. **19** above), or before a verbal noun or an imperfective verb in a locative phrase. When they follow a noun (iráho ligía *masc.-the or this child*) or an indefinite verb unmarked for person (erę́ga tugúia *she said*), the locator ligía, tugúia, hagía are clearly attributive; but such phrases as cólo ligía *he arrived* and niúru tugúia *she sat down*, in which they follow morphological particles and function like auxiliary verbs, must be classed as exocentric. And if áibuga ligía (VL) *he walked* is a verbal phrase, the stylistic variant ligía áibuga (LV) can hardly be called locative.

Phrases constituted by a locator in ahą- *if, when*, or *then*, as in áhaį tia tadóga (*if-it it-is she-do*) *if she does it*, I regard as locative because they appear to me to be functionally (though admittedly not semantically) equivalent to another locator, such as ligía *so*, which may occur by itself in a minor clause.

Though it may be verbalized by an aspect-marker plus pronominal suffix, the negative particle máma *without, not, it is not* itself often functions like a verb, as in máma káta buídti *it is not* (*a*) *good thing*, máma lų ló lą (*is-not for-it long-time its-being*) *not for it to be long*, máma nadógo *it is not my doing*, and such phrases containing it are probably to be regarded as exocentric—that is, as verbal. I have always regarded máma as consisting of the privative prefix mA- together with the nominal base -uma *with*; but the latter's resemblance to the auxiliary-verb theme -a- ~ -uma- should not be lost sight of, nor similarly that of nominal -ubá(ra) *before* to the theme of the imperfective auxiliary-verb theme -uba-. Mention may be made here of a form mámai, which may or may not be related to the particle of negation máma, and whose meaning seems to be explicative. It occurs only very few times in data, and I was unable to analyse it. Examples of its use are: (*that which I did when you were here I have become unable to do*) mámai sądihadína *for I have become sick*, (*but it was impossible for the boy to go where the old man had shown him,*) mámai ámu ubáu lidą uénedo luái dą le básarų *for the world is different in dreams from the time of thy getting up*, uíetių gię masę́sutių sų mutu mámai garúehaią *everybody was dirty and moneyless since they had got* (*acquired*) (*a*) *king*.

20. In a language such as this, in which form-class and syntactic function are often at variance, and whose verbs usually include pronominal reference to the subject, even when the latter is further specified by a name or a noun, the terms 'subject' and 'predicate' lack precise meaning; and my unorthodox definition of the clause seems to

be the only one possible. But since my prosodic data are quite inadequate for such a purpose, almost all I have to say in what follows must be regarded as subjective; and my only excuse for saying it at all is that I am dealing with what to all intents and purposes may be regarded as an unknown language.

Thus I regard the utterance: súądą tadóga hįáru toa sábų. gadógattu lú. as consisting of two sentences because the word sábų is characterized by the final intonation of a statement and is followed by a pause, just as in the case of lú; and although, in a free translation, I should employ a semi-colon: *this woman often makes soap; she knows how.* The utterance follows what I regard as the basic word-order, the subject, hįáru toa, being inserted between the predicate centre, tadóga, and the goal of the action, sábų: *often she-make* ( ) (*indefinite*) *woman fem.-this soap*; but this order may, as we have seen, be changed for reasons of emphasis or style. The second part of the utterance gadógattu lú *able-to-make-is-she masc.-it-to*, illustrates the fact that an 'adverbial' noun with the theme -ų ∼ -uni (v. **11.31**) always serves as pronominal goal, when one is required, of an habilitative verb (v. **3.1**, **4**, et passim). The same order is usual in mandatory constructions, such as: madógagubái tái tia mútu nú *not-do-at-all she-conjunctive-it it-is a person to-me = let no woman do it to me at all*, specific and yes-or-no questions, such as: hagái-gi búguci *where is thy father?* and aríha lumúti sa náti láborehą *does my brother see what he is writing?* except that here as elsewhere such verbal particles as tia, gi, and sa commonly intervene between the predicate centre (the auxiliary verbs tai and lumuti, the locator hagái) and the subject (mutu *person*, búguci *thy father*, náti *my brother*). Apart from the use of such particles as sa, gi, or rai, which usually indicate interrogation of one sort or another, and specifically interrogative words like the particle ída *when or how* and locators in hagá- *where is*, the interrogative and informative sentences differ only in their final intonations. And while the specific questions are doubly clear in having, besides a specifically interrogative word, the same falling-rising final intonation to which I am accustomed, such a yes-or-no question as gágucigidíbu (*having-father-still-art-thou*) *is your father still alive?* was at first very puzzling to me because, while it lacks the falling and fading pitch of a statement (which the same word with it would be), I often mistook the level (sustained) final intonation of such questions for what to me seems to be the same clause-final intonation, and waited for the rest; understanding the meaning of the words, but not of the utterance.

The Dominican dialect of Breton's time appears to have had an interrogative suffix, -ra, which replaced the relators -tI and -lI ∼ -r (corresponding to 111, -dI, and 112, -lI ∼ -r of our dialect) before the person-marker suffixes (-r + -u > -ru, but -ra + -u > -ranų) in order to form interrogative verbs. What may be a last trace of such constructions is seen in the use made of the verbal particle rai to express surprised interrogation: gerégatti rái lų garífuna? *does he really speak Carib?* (*able-to-speak-is-he* rai *to-it Carib*).

Except in narrative, and ceremonial speech, where involved sentences are more common, subordinate clauses other than those of the simplest kind are infrequent. As we have seen, this language has no true (unambiguous) connectives; and those words which serve in their stead often entail concomitant grammatical constructions that seem—at least to a foreigner—extremely cumbersome. So, the morphological nouns luágu or láu and lú, normally translatable by, respectively, *upon or about him or it* and *to or for him or it*, are often to be translated by a construction in *that* (conjunction) when they occur before a nominal auxiliary phrase in lą *its or his being* (or its variant la). The following example comes, as it happens, from a conversational text: lerégа tia nú

luagu há la adímurehátių luagu G lų, lų́ la lerę́ga haų luagu mabúse la lagą́bu ní kata luágu Bra G *he told me concerning those who talk to him about G, that he tells them that he doesn't want to hear anything about 'Bra' G.* ('Bra' is an egalitarian form of address between young men of about the same age; it takes no affixes, and I am uncertain as to how to class it). This is a subordinative endocentric (VN = V) construction, whose head is the first clause, and whose structure can be shown adequately only as follows (H = head, A = attribute, V = verb, N = noun, vN = verbal noun, xvN = auxiliary verbal noun, L = locator, P = particle, vP = verbal particle):

H. lerę́ga tia nų́ luagu há la adímurehátių luagu G lų
  H. lergę́ga tia nų́
    H. lerę́ga tia
      H. lerę́ga (V) *he say* ( ) (indefinite)
      A. tia (vP) *it is*
    A. nų́ (N) *to me*
  A. luagu há la adímurehátių luagu G lų
    H. luágu (N) *its concern—concerning it*
    A. há la adímurehátių luagu G lų
      H. há la adímurehátių
        H. há la
          H. la (= lą, xvN) *its being*
          A. há (L) *they here (animate)*
        A. adímurehátių (V) *they talk*
      A. luagu G lų
        H. luagu (N) *about him*
        A. G lų
          H. G (N) *G(eorge)*
          A. lų (N) *to him*
A. lų́ la lerę́ga haų luagu mabúse la lagą́bu ní kata luágu Bra G
  H. lų la lerę́ga haų
    H. lų la lerę́ga
      H. lų la
        H. la (= lą, xvN) *its being*
        A. lų (N) *for it*
      A. lerę́ga (V) *he say*( ) (indefinite)
    A. haų (N) *to them*
  A. luagu mabúse la lagą́bu ní kata luágu Bra G
    H. luagu (N) *concerning it*
    A. mabúse la lagą́gu ní kata luágu Bra G
      H. mabúse la lagą́bu
        H. mabúse la
        H. la (= lą́, xvN) *his being*
          A. mabúse (P) *not wanting*
        A. lagą́bu (vN) *his hearing*
      A. ní kata luágu Bra G
        H. ní kata
          H. kata (L?) *thing*
          A. ni (P) *not any*
        A. luágu Bra G
          H. luágu (N) *about him*
          A. Bra G (NN or PN = N) *Brer G(eorge)*

In this last clause lų la *its-being for-it* must be translated by an English conjunction in *that*, as must also luagu (mabúse 1a).

And similarly, from the text of a dictated folk tale, the sentence: cóloti luágu dą́, láunaha urúei gárada lídaų áudo luágu aniáhaį la órua tiráohǫią N, lų la hibíhini hąiúmuragúni, íridaguáina lái-ti ka la siuámaį habái iráhǫią há *when the time came (it-arrived it-upon time), the king sent letters to the town (saying) that there were there three children of N (its-concern they-are-there its-being three her-children N), that they should obtain their wish (its/his-purpose its-being their-obtaining-it their-wish), (and) making it known what it was that these children would like (by-announcing he-conjunctive-it it-is what it-be-conjunctive liking that-they-be children these).* This gives as exact a clause-by-clause translation as is compatible with normal English usage, together with such word-by-word translation in parentheses as is requisite in order to show major structural differences from the English, and to what extent interpretation and interpolation have been resorted to. A deal of pronominal cross-reference has been omitted from the translation, to which tense, and such items as *when, the, and, of,* and *saying* have been added. Subordination of the first clause is not indicated by the text (except that its verb is aorist, whereas that of the second clause is indefinite), but seems to be re-

quired by the sense. The general meaning of the sentence as a whole is not in doubt; but, without much more prosodic data than I possess, it appears to be grammatically ambiguous, since the third clause might, perhaps equally well, be dependent upon the fourth: (*and*), *in order that they might obtain their wish, announcing what it was that these children would like.*

Such complications are often avoided, in normal conversation, by parataxis, and by substituting direct quotation for indirect speech. A good example is provided by the following spontaneous utterance, which, like many others of a like kind, was caught and recorded on the wing, as it were, with no other machinery than pencils and paper, through the combined efforts of an eighteen-year-old assistant (himself a native speaker) and myself. Sentences are followed by a full stop (statement), question-mark (specific question), or a note of exclamation (interjection); clauses by a comma. 1. buénu. 2. lubáti larúga bináfi, náibuga iébe Dągrígo, iú nią-ti béiabu, ligía tiábi iráho toa, terégа, "nítu Huána-o, máma funá bugá-tia sęsu bícigubái-nų urínauga." 3. "àhá! 4. kátaų gía? 5. toa funa lágai, hagáų-gi?" 6. "inúhaį iára, aráida na." 7. buénu, nidúhęiu. 8. ą sá, dą le tídi áluahaų, madáiri tátu. 9. saráragua táų sų ubárari, ni tífe. 1. *Well.* 2. *It was before the dawn of morning, as I was going to Stann Creek* (*I'm-going contemporaneous-tense S.-C*), *I was sitting at the landing place, when this girl came* (*it-is-then her-coming child fem.-this*), *she said, "O sister Juana, it could not have been money that you gave me yesterday."* 3. *"Eh!* 4. *What's that?* 5. *Maybe the envelope, where is it?"* 6. *"It's there, I've kept it."* 7. *Well, my friends* (*my-kin-plural*). 8. *What then, what she went to look for it* (*at-the-time her-going etc.*), *she didn't find it.* 9. *Undo all the bedding as she might, not a scrap of it.* The translation is analogous to that of the sentence cited in the preceding paragraph. Again, tense has been added; since the tense particle buga, in the last clause of 2, here indicates anteriority rather than past tense. Except in the second clause of 8 (dą le), and in the first clause of 9 (the conjunctive phrase: saráragua táų), subordination is implicit—being indicated, that is to say, only by clause sequence. What the girl had said to the speaker, and the speaker to the girl, is cited verbatim.

Finally, I cite a conversational utterance showing how unassimilated borrowings are incorporated into the local speech:- 1. neréga abą kátai hų. 2. liábiha abą mútu Manádi Lagúnugeę, láunaha nége túmari Kapá luma, lų táunahą lų́. 3. buénu, áunaha tugúia nege aréba luma abą páįti bínu, búa tái nege tídą iamádi. 4. uél, músbi (*must be*) mútu la lea ícigubai kátai lídaų. 5. ábą nege drį́ki (*drink*) lanógo, áhaį búru árabu. 6. lerégа nege túguci Henderéta luagu leá la adógobali, lafáieruba lá luagu. 7. terégа negé-ti, "nugúia, ligíbugię bųgiu siélu, máma nadógo." 8. an (*and*) tinárǫ, ladóga inúhaįgiua Kapásera. ... 9. náiba aríhaų nufáluma. 1. *I'll tell you something* (*I-say-indefinite a thing-masc. to-you*). 2. *A person came from Manatee Lagoon, saying that K's husband had sent by him, that she was to send* (*something*) *to him* (*he-send-indefinite quotative her-consort K him-with, for-it her-sending to him*). 3. *Well, apparently she sent cassava-bread and a pint of rum, enclosing it in a travel-basket* (*enclose she-conjunctive-it in-it travel-basket*). 4. *Well, it must be this person who put something into it* (*must-be person it-be this-masc. who-put thing-masc. into-it*). 5. *When he took one drink, he plunged into the the woods* (*one quotative drink his-taking, is-then-he plunging* (*P*) *woods*). 6. *Apparently H's father said concerning whomever had done it, that he would pay for it* (*he-say-indef. quotative her-father H about-him he-here its-being who-did-it, he-will-pay it-be concerning-it*). 7. *Apparently she said, "as for me, in the face of God* (*in*) *heaven, it's not my doing."* 8. *And she's telling the truth, because K is still there* (*and her-truth, it-do-indef. she-is-there-still K*). ... 9. *I must go and see about my coconuts* (*I-go-imperative see-fem-it my-coconut*).

21. Texts.

A: Conversational snatches. Numbers in parentheses indicate separate snatches of conversations, not necessarily recorded at the same time or place. Lower-case a, b, c, etc., indicate first, second, third speaker.

(1) (a) famútu mútu túbię, iníha húia áhuia tigábanarúgu. (b) galámiselútių giętia hábię. (c) hagáų-ti túbą Nurá?

(a) *lying-face-down-is-she person at-her-home, here-it-is rain pour-down in-her-bed-here was the woman lying face down at her home, and rain pouring on to her bed.* (b) *having-distress-are-they also it-is at-their-home-there's great poverty at their home too.* (c) *where is N's house?*

(2) (a) nagąba abúnhaį nege Sénibáidi. (b) hanárǫ. (a) má sa tugúia lúmaribaų Raimúdu? (c) ąhą. (d) dą le tadógorahą túgucu, lídą dą ligía, máma tia hurárao. aríha báru ligía, N, málagodahá-ba. (a) iníhaį gię-tia lanáimauga iá, náibuga. (c) níciguní luagu mútu leá, lau iníhaįhalí la Sénibáidi. (d) máigigią negé-buga. (a) ą sá, guríara tugúra, bináro buga tásogora.

(a) *They say you've been to Seine Bight, I hear* (addressed to passer-by). (b) *They're right.* (a) *Isn't it she who is R's wife?* (c) *Yes.* (d) *When her mother gave dogo-ritual, at that time, it was not play. You've seen her* (*and*) *how it is* (*with her*), *N, don't ask questions.* (a) *there-is also it-is its-violence here, I'm going.* (*It's getting rough here, I'm going*). (c) *My-putting-it upon-him person masc.-this, about-it he-has-been-there its-being S.-B.* (*I'll bet that man has been to Seine Bight*). (d) *They had not yet eaten it seems.* (a) *What of it, yon dugout, it passed long ago.*

(3) (a) dą le táigagunu, táhocoha. gudémetu. (b) iníhaį me tia táiginibu íliba. (c) hm. (a) terę́ga tia, "namúlenų, náueba tía."

(a) *When it* (*the pain*) *gnawed her, she trembled. She was piteous.* (b) *There-is future-tense it-is its-biting-thee centipede* (*There comes a time when a centipede bites thee*). (c) *Hm.* (a) *She said, "My juniors, I shall die."*

(4) (a) áhaį hamúga gebégidinátina, alúgurahátina hamúga bų, peru lúbuią adarásarubá-dina. (b) ída me ladáru cap líte me, nídiba. (a) ída tią-gi iráho toa? (b) dą le buídu la dą tų, úati giáti tia. dą le tátų árani, agáįdaguátina. (a) dibúnaį nuáguni? (c) má sa lau gúrudu tadógua ógorao toá? (d) úa. lau guráua tadógua. (c) gerę́gatti rái lų garífuna? (b) gerę́gatti lú, áie.

(a) *if-it would-be I-have-merchandise, I-sold would-have to-thee, but its-material will-hinder-me* (*If I had the merchandise, I would have sold to thee, but the material will hinder me*). (b) *when future-tense its-opening shop masc.-coming future-tense, I'll-go* (*When the shop opens just now, I'll go*). (a) *How is she this child?* (b) *When she's in a good mood, there's nothing wrong. When she's drinking medicine, I get angry.* (a) *fat upon-me-emphatic* (*Am I fat?*) (c) *Isn't it with* (*commercial*) *twine it is made this hammock?* (d) *No. It's made with la pite* (*sp. of wild pineapple*). (c) *Does he really speak Carib?* b. *Yes, he can speak it.*

(5) (a) tábuagią funá Telefóra. (b) temére hjáru toá. peru hárabai uátu lų eiéri leá. (a) áhaį-ti ríca lubái tiuénedo, láhurarúba númeru ligía. (b) rícahaįti tia tiuénedo, láhurarúba.

(a) *Telesfora is cooking maybe.* (b) *her-way woman this* (*That's her way*). *But the fire will be hot for the man.* (a) *If her dream should be right, that number will play* (i.e., *come out*). (b) *Her dream is right, it will play.*

(6) (a) lóha gię-tia marihi nánu Tana. hagái gia sá tauáiri? (b) iníhaį Sénibáidi niéįhę. (a) berę́ga me tú luagu agúburuhą nánu Basíli. iníhaį núma ia. (a) ída tíą funáti uáiriau tugúra? (b) úati gia-ti taríhunua ugúie.

(a) *It's been a long time too since I've seen Tana. Where's her old man* (*husband*)? (b) *He's there at Seine Bight thither.* (a) *You'll tell her that I collected* (*the money*) *from B, I have it here* (lit. *it's-there with-me here*). (a) *How may she be yon old woman?* (b) *She looks all right today* (lit. *it-is nought-amiss her-being-seen = her-appearance today*).

(7) (a) dą le háidi lúbię Tímu, niéį nadáiraią muládunų, hagía agą́eiha féį. (b) gádoroiáį asíedu hanógo nuái, bía sása lúmaburí tumégegu Nurá. (c) lámuią. kátai ma. (d) gadí lią́-gi? (b) rúrogo liąli lái luágu ligíra buga. (c) náibuga, nítu. aiáu. (b) aiáu, náti. álugubádina buágu.

(*a*) *When they went to Tim's home, I found Ladinos there, and they buying bread.* (*b*) *It's four plates they took from me, two saucers, together with N's belongings.* (*c*) *Isn't it an odd thing.* (*d*) *What's the matter with him?* (*b*) *Only that he put garlic on it the other day* (ru *put*, -rogo *restrictive*, liąli *he-progressive-it*, a form of auxiliary that usually is admonitive). (*c*) *I'm going, sister. Goodbye.* (*b*) *Goodbye, brother. I shall miss thee* (lit. *I'll-be-seeking upon-thee*).

(8) (a) ída lį́a sá? máganiti sá? (b) máma mútu gáganiti lúmagię lacóloro. (c) ída lį́ą sa lágoroni? luágu lugúdi, ą́há. (a) lagúara luágu dúna, máhatių hícigu dúna lų. (b) iníhaį tia gię táiginibu kátaų toa, mábaigua bagóleru (= bagólerugu). (a) ligía máha nubái náibugu lídagiębúri lagóburi óma.

(*a*) *How is that? Hasn't he enemies?* (*b*) *He's not a person to have enemies* (*ever*) *since his arrival.* (*c*) *How did it bite him* (lit. *its-biting-him*)*? On his foot, I see.* (*a*) *He called out for water, they wouldn't give him water.* (*b*) *And when that thing bites you, your throat gets dry* (lit. *it's-there it-is also its-biting-thee thing-fem. this-fem, dry-stative in-thy-throat*). (*a*) *That's why I won't walk by way of disused paths.* (The plurality of the reference to óma *path* is shown by suffix 355 -buri in the noun lídagiębúri *by-way-of-it-several*).

(9) (a) nagóto, gudáti bugá-tia ną́iahą́. (b) a! iníhaį gię imábunurúni tuágu. aríha bá! (a) bía tia daiáruti iódogubái. ligía lá́uba.

(*a*) *grandmother, my batch* (lit. *baking*) *was burnt.* (*b*) *ah! what bad luck she has* (lit. *there's also misfortune upon her*). *You see!* (aríha bá *thou hast seen*, and aríagu bá *thou hast watched*, are employed as interjections of admiration or dismay,—especially by women). (*a*) *Two entirely gone. This is part of them* (lit. *it-is-this its-side*).

(10) (a) ámuti gię́-tia uoríbu, dą le gą́jahadíbu. (b) nemére. ságo náragodonú, nahámacu tuágu, nágurunú gię múarugu, nágorogunú, asáluha náų me gię. (a) aú! masáluha bá! uríbabai. (c) máuniti bagą́įdagu lúma. (b) *no-o!* nagą́įdaguba, dógua uamámugaia.

(*a*) *It's an odd squabble, when thou hast got angry.* (*b*) *It's my way. Every one I catch* (lit. *each my-catching-her*), *I pounce* (lit. *my pouncing*) *upon her, I throw her to the ground* (lit. *my-throwing-her also to-the-ground*), *I bite her* (lit. *my-biting-her*), *I would 'salt' her too.* (*a*) *Oh! Don't 'salt'. It will be bad.* (*c*) *It's useless thy fighting with him.* (*b*) *No-o! I will fight, may we come to blows again.*

(11) (a) aríha bauų páta túra! ịura gíę, ą́? (b) legé (= lea gía) ácuaha numúti tia tuágu irúmu ligíra. (a) lubárogo tia máiguadi ta. áhaų hamúga gáiguattu, mítaratu hamúga

(*a*) *Look at that prickly pear! Grown high, eh?* (*b*) *That's because* (or nearer, Sp. *este está*) *I chopped it down last year.* (*a*) *Only because* (lit. *only-for-it*) *of its being uneatable. If it were eatable, it would not be like that* (lit. *not-thus-is-it would-be*).

(12) (a) luágu áibuguní ligía, inúhaịharu N manírogaru. (b) átiriánų sa tiráhǫią lau G? (c) magą́bahadítu tia lų.

(*a*) *On that walk, N was there just silent* (inúhaịharu *she is there perfective she*, manírogaru *silent-restrictive-perfective-she*). (*b*) *How many children has she by G?* (*how many-are-they her-children by-him G?*) (*c*) *She won't listen to him.*

B. Folk Tale. Paragraphs are labelled A to W, and sentences are numbered for each paragraph separately. The title given to the tale by its raconteur is labelled X.

X. úraga hauágu órua tiráhǫią abą uóri, toa íbugaiąo Héru lį́ą tíri, Huána haránaguatu, Cósi tią́-ti toa amúleluao,—órua hịárių.

A 1. luáguti abą dą́, ítara lią́-ti, iú haią́-ti

iráhǫią há luagu tamúiegię hábą adímureha, ligía hásogoro órua eiérių, ábą liráo urúei, ábą liráo ásoraháti féį, lea ábą liráo áfaraháti bágasu. 2. ligía-ti terę́gu Cósi, "dą le hamúga namáredu, buse̹tina hamúga namáredu lúma liráo urúei." 3. abą héherahą́. 4. terę́ga-ti toá iránaguatu, "nabúseru lų namáredu lúma liráo adógoti féį." 5. éheraméme hagía. 6. terę́ga-ti íbugaiąo, "nabúsueru namáriedu lúma liráo áfaraháti bágasu, lų hamúga náigi úi." 7. abą háuegu éheraha.

B 1. agą́bagu tugúia-ti hágucu háų, lásuru-ti gumúha hadímurehą́, abą hebélugu múnadaų, adóga hamái lea lubái hadógoni. 2. uél, larúga bináfi abą tídi hágucu adímurehá lų urúei, ereę̹gai lų́ ka la hereę̹gubai tiráhǫią. 3. lereę̹ga urúei tų́, "madíhari bá, hibíhubai hąiúmuragúni. 4. gudątina gię̹ nagą́bu abą kátai ítara." 5. abą lícigu abą mílu fiádoro tų uáiriau toá, lų tagóriahanįų iráhǫią há.

C 1. cóloti luágu dą́, láunaha urúei gárada lídaų áudo luágu aniáhaį la órua tiráhǫią *Mrs. Willy*, lų la hibíhini hąiúmuragúni, íridaguáina lái-ti ka la siuámaį habái iráhǫią há. 2. cóloti dą́ uáinamuháią-ti uorĮią ha, *an'* lanárada gię́-ti kátai lea.

D 1. ítara lią́-ti lárigi maríehaią lą́, káiburi bía háti láugeę, áhaį híla urúei. 2. lániura-ti liráo luagu hálao. 3. káiburi bía dimásu lárigię tarúeha uóri toa, áhaų híla túgucu. 4. ítararu tubái-gia, lasáminará-ti iséri urúei lea lų́gua, lau mabúseru lą́ laráodu, merę́gu-ga lái lų gorírigua. 5. *an'* toá-ti lúmari busuę taią-ti iráhǫią há, (lidaų iędięti guérpu), ábągubái láunaha gárada lų hadámaridágu sų́ mútu, lų hagą́buni ladímurehą urúei ladǫ́oro ábą uéiu fédu.

E 1. buénu. 2. cóloti dą́, hadámaridagúati gorígia há *right* tigíbugię lúbą urúei. 3. ladǫ́oro ábą, ligía láfuridu luágu tamúiegię lúbą, lerę́ga, "nidúhęiu, nerę́gu rogǫią hų́ lea narítagu hauágu niráhǫią há lubáią ledéuehanįų nubų́giote nų́. 4. óruarogoiánų nabúseru, bía eiérių, ábą hįáru. 5. toa furúmie, niéįbaų uarúguma luágu terébe. 6. lea habíama, niéįbai háti luágu lerébe. 7. lea haórua, niębai uéiu luágu lerébe. 8. nidúhęiu, erę́ga náli tia hų́. 9. gudątina hamúga hafuréidu nuágu. 10. tę̹gi nią́-hų." 11. niéį lagúmuca *meeting*, abą háidi mútu águiu. 12. áriabu, ligía gumésegubái-ti luágu dási lea.

F 1. lídaų iebe bía dimásu iaráfali lų tagóriahą uóri toá, uel, ítararu tubái-gia, tereę̹ga lų urúei, "buse̹tina lų níbugaiánųba lą́ ágodahana." 2. lerę́ga tų, "áunagoda bá hauágu." 3. íneme funá-ti buga iéregutu hamúlelua toa háų, ladóga tugúia la garáo gia habá. 4. peru marúhudu hamúti tų. 5. cóloti dą́ tagóriahą uóri toa, le láfuacubái iráho, durúgua úhuiu múnada. 6. hanógo gię gamísa abą hagóroguni erébei lea. 7. hásuruįą gję, hanógaų-ti iráho toa, hícigaų lídaų básigidi, tídi Héru águraų lídaų abą dúna, abą lídi lábu básigidi leá. 8. buénu, tárigię itararu tą́, hanóga abą mésu, herę́ga lų urúei luagu inúha lą liráo. 9. hiláti iebe. 10. buénu, abą lagúaragu aiáhua. 11. lerę́ga haų, "baró humáų túmaų túgucu", abą háidi ícigaų tų uóri toa. 12. inuhá-iebe gję́-tia lau ábą anúfudei, peru uóri gię́-ti buga toá ibídięti tų́ ka la tiráobaų, (durúgua bugá-ga úhuiu), abą tanógonu.

G 1. tedéregubudú-ti, áibugaiahá tugúia. 2. áibugią-ti tedéregubudú mésu. 3. peru manógogíli órua háti, abą teféridirų mésu. 4. lólohati háu áluahaų. 5. dą́ le tadáirų, hama gádoro tíbegu túma túgucu. 6. abą háidi mútu agúara lų urúei, hama há ágodahabáią. 7. lerę́ga haų, "hináro sá luagu mésu lą́ tiráobaų?" 8. herę́ga lų́, "ą́hą". 9. abą láhudurágu, lerę́ga, "nubúgiote, buágu tia nícigai nafíę." 10. ligía, dą le hadógo mútu uríbati bų́, madíhari bá, láguiuba háu.

H 1. buénu, ábą dimásu tárigię, taríhuaia uóri toa—buĮia. 2. lacólora iáų uéiu lų tagóriahą, uorĮią meme ha ágodahaų. 3. dą́ le iaų láfuridų iráho lea, áhaį iaų durúgua kátai. 4. hagóragunú iaų licígo, abą tídi Héru ígiragodái, kái buga tadóga tų toá furúmie. 5. buénu, guę́-toa ábąhalí-ti gábara. 6. hanóga lų urúei lea, lerę́ga haų, "rú-

humái tų lúgucu." 7. hacóloro túmaų lúgucu, resíbigi tái-ti, kái buga lea maríhi táni ligíbu lúma ladúragu úhuiu.

I 1. buénu, maósterugíli gábara órua uéiu abą uéiu abą lanúru. 2. láluaháua. 3. le ladáiru, túma gábara líladi, toa lúgucu. 4. lerę́ga urúei luágu, "áhaį nisínu lubái, úatu kátaų tuágu, peru áhaį tia higímuga lubái, láfuacubá tia." 5. gumúgua iáų-ti líra.

J 1. buénu, káiburi ábą dimásu tárigię bíme tumáru-ti uóri toa, áhaų buį. 2. uél, cólo iáų-ti dą tagóriahą, dą le iáų laríhi iráho leá, ní iebe lúgucu siá tumúti iebe auą́da lea lanáime líso luma lára. 3. uél, grágua iaų licígo, abą tídi Héru águrai. 4. buénu, hanóa iaų uorįią há abą labóto áųli lų urúei lea. 5. lerę́ga hau, "gudątina láu". 6. abą héherahą́ ágodahatį́ų ha. 7. hagáraragú, abą háidi ícigai tų lúgucu.

K 1. uéiurogoiáį lau áųli leá, abą lanúru. 2. anúra lubái-gia, uél, máma-ga lúgucu. 3. lasáminará-ti urúei lea lúgua, lerę́ga, "nálagodarú uóri toa ká la uágu ibídię habái tiráhǫią tú́." 4. abą láuaru tú hama ágodaha tú́. 5. lániuragodá-ti, lerę́ga tų, "ká sa baríhubai dą́ le bagóriahabái?" 6. terę́ga lų, "le furúmie, abą larúgauga. 7. le libíama, ábaia larúgauga, peru díliti. 8. le lórua, abą larúgauga, peru sóto—hárati gię́." 9. abą láhįigicúni licígo, abą laiáhų. 10. lerę́ga, "ítaru tubái-gia, basúfurira." 11. abą lícigu áurdę lų la tícigu uóri toa láru óma, *an'* lų úa ásogorúti lų másuerúbai la tuágu. 12. áhaią éhera há ágodaha tú́. 13. buénu, tárigię ítararu tą́, ladógaia áurdę leá, goráua gia uóri toa. 14. abą hagóragu luágu abą uagábu. 15. sú́-ti ásogorútių hásueru tuágu. 16. mabúsuerutýų iebe mútu, peru aniáha sudára lų hadógagodóni hau. 17. buénu, manógolíli bía háti, luáguhalí tigácorogo uíe.

L 1. sú́ funa bugá-ti dą́ hadágunu ágodahatį́ų ha kátaų toa, iníha funá-buga bú́giu háma iráhǫią há. 2. iníhaį-ti abą uáiriai mútu agánauti láru dúna leá, lų larúmadahą́ tau burígi dą le lá labulécų dúna. 3. sú́ funa bugá-ti dą lígiragodonúa básigidi leá, macólogíli funá-buga niéįhę. 4. léti iníha la uáiriai lea adóga luádigimári, ligía laríhini liábi básigidi leá óruagubái. 5. lerę́ga lú́gua, "lámuią kátaį ma. 6. lóhadina iá maríhitina abą kátai ítara." 7. abą laráramu. 8. lacóloro básigidi leá *right* ligíbugię lídą tia lacíligi dúna, abą lagéiadu luágu. 9. áibagúati iebe luái, óuara lúma tacóloro lúmari niéįhę. 10. lerę́ga tų, "aríha bá". 11. terę́ga lų, "ledéueha búgiu uáų. 12. budá-bai." 13. ábą labúduni. 14. lé ladáraguní, órua iráhǫią goráuaguati hacígo. 15. ábą hanógonių hábiaų. 16. hanógonių lídagię fanie, terę́ga lų túmari, "má buga nįą bų?" 17. abą tagóriahanį́ų.

M 1. dą́ le įcarauhą́ią, máma licú hau. 2. máhaią gię hauádigimári uáinamuhą́ią ha. 3. hagíaia adógai sų físiu. 4. hagía niéį, hagía niéį. 5. cólo dą ábą láue uáiriai leá abúdubalią. 6. haiáhua iráhǫią máu. 7. buná hamái-ti, peru táugię-ti hálugu luágu. 8. hagía niéį. 9. uáinamuha gię́-ti iráhǫią há. 10. luágu-ti ábą uéiu, ligía leuéneduha leá amúleię, lerę́gu uáiriai lea abúdubalią lú́, lų lídi arúhudai lú́ halíaiaį la lanícigu ubáu. 11. ábą nege lídi lúma, arúhuda lái nege lú́ sų kátai. 12. abą lagágudu. 13. peru siąti-ti lídi iráho lea niéį lubái buga larúhuda uáiriai lea lú́, mámai ámu ubáu lidą uénedo luái dą le básaru.

N 1. buénu, manógǫgíli bía dimásu, ligía tiábi Uanúi. 2. terę́ga lų iráho lea, "meuénedtibu sa?" 3. lerę́ga tų "ą́hą, ítagaina ítagaina niuénedu." 4. terę́ga lų, "harúga abáhodaha bái hau bíbirigu. 5. lárigię, berę́ga me tų bagóto lų tásoro ábą durúdia bú́. 6. tagúmucu, bauáira me tuágu bilógo gabáiu, banógai me óma lea tédegeębái húbą, bafálarai me. 7. peru lubáragię me bídi, lų bícigunú gusįiu toa tų bagóto." 8. abą tícigu ábą gusįiu lų. 9. "berę́ga me tú́, dą me lé la lédederu hítao tuáigię, láu hiládibu lą́." 10. lerę́ga tų, "tę́gi nią́-bų", abą tídi.

0 1. sú́-ti lea terę́gubai lú́, adóga lumúti. 2. larúgua-ti, lanógunu láiga durúdia, abą lauáirunu lilógo gabáiu abą lídi. 3. ligía luagu mábu, ligía luagu mábu. 4. luágu laósteru bía uéiu, ligía ladúragu luma ídiu-

mao. 5. lálugucaų lisíreste, ábą lagúmeseru ásaha. 6. lásaha, lásaha. 7. le laósteru bía áura, ligía lacóloro lúma abą uáiriai mútu ráramagúati iebe. 8. ligía lerégu lų, "niráo, háliabádibu?" 9. lerę́ga lų, "náibuga áluahai lirísi ubáu." 10. lerę́ga uáiriai mútu lea lų́, "niráo, báibuga. 11. iníha gunúrima leá, huí-bai bubárua. 12. niéį lumúti lerédera, niéįba baráira. 13. peru madígiragua bá-tia bárigaų, *no matter* ka la bagą́bubai, agą́bali?" 14. "tę́gi nią́-bų, náruguti", ábą lídi. 15. leréderu gunúrima leá, laráiru tuáigię lilógo gabáiu, abą láibugu. 16. ligía áibuga, ligía áibuga. 17. súdęti lagą́bu herę́gu mútu, "áfara bái". 18. madígiragúti iebe, ábą lagą́bu, "mirá-bai", áhaį digígua. 19. ladígiragúgię leá, áhaį salígua dóbu me.

P 1. buénu, le laósteru bía irúmu, ligía tídi uáiriau aríhaų gusįiu. 2. áhuia hítao tuáigię, ábą taniúru aiáhua. 3. hárigi-ti líbirigu áibaha. 4. hacóloro, ligía herę́gu, "agą́ba uamúti buga lumálali uamúlę árabu." 5. "harúga nídi áluahai", ligía-ti lea iránaguao. 6. larúga gię́-ti, úati ni darásaru, sóua buga gię láiga durúdia, abą lídi. 7. ligía luágu mábu. 8. áhaįia dų́gua lúmaia búga ídiumao, lálugucúnu iaų lisíreste ábą lásahą. 9. lacóloro lumaų uáiriai leá, lerę́ga lų, "nióbuiti ábą iráho iáhaų luágu irúmu ligíra, benége dén." 10. lerę́ga iráho lea lų́, "hagái-gi?" 11. lerę́ga lų, "inígira nége áluahai lanícigu ubáu. 12. peru áhaį báibuga lubái lárigi, baró-bai gunúrima leá, bágurai me bubárua. 13. niéį lumúti lerédera, niéįba baráira tuáigię bilógo gabáiu. 14. peru áhą́bu agą́ba umálali, madígiragua bátia." 15. lerę́ga iráho lea "tę́gi nią́-bų́", abą lídi. 16. lafálarai gunúrima leá, leréderu, ábą laráiru abą láibugu. 17. súdęti lagą́bu umálali erę́ga, "ragó-bai, tigí-bai ligína." 18. ladígiragúią iebe aríha, ligía lasáliragu dóbu me.

Q 1. uél, ítararu tubái-gia, laósteru uído háti, ligía tídi iaų uáiriau toá aríhaų gusįiu toa. 2. iníha iaų hítao dén. 3. niúru tugúia iaų uáiriau toá, abą taiáhuahą. 4. ligía terę́gu ítu tų, "nagóto, áhaį gubáirogo úa lubái bų́giu siélu. 5. náibuga áluahaią namúlenų." 6. terę́ga uáiriau tų, "ų́dile bá, niráo, uásati óma bubá." 7. sóua tugúia iaų táiga durúdia, tauáirinu tilógo gabáiu, abą tídi. 8. tugúia luagu mábu, tugúia luagu mábu. 9. ligía tadų́ragu luma ídiumao. 10. tanógunu tisíreste abą tásahą, tugúia ásaha. 11. cólo tugúia lumaų uáiriai leá, lubáragię iébe terę́gu abą dimúre, lerę́ga uáiriai lea lų́, "ahú! 12. lámuią abą kátai ma. 13. máma sa bidúhęiu, bía eiérių há nióbuibaią iáhaų lidą háti lea sogóinalibái?" 14. terę́ga, "giárati, ladóga féridi há, *an'* niábią-ti áluahaią." 15. ábą iebe tásogoro. 16. abą lerégu uáiriai leá, "baró-bai gunúrima leá, bágurai me bubárua. 17. niéį lumúti lerédera, niéįba baráira tuáigię bilógo gabáiu." 18. terę́ga "tę́gi nią́-bų náruguti", abą tídi. 19. leréderu gunúrima leá, abą taráiru. 20. óuara lúma láfuru núru. 21. inúhaį-ti abą tídibu máuru niéį. 22. tátoha, tácaraguaų tarígairugu, ábati tauąseru tubáruagaų. 23. sų lúiari kátai erę́guati, magą́bu tumúti. 24. tugúia áibuga. 25. ligía tasą́diru tadǫ́ro tanágagię, peru madígiragúatu. 26. máibugugíru dímisą bą́du, ligía taríhi abą dunúru tídą abą *cage*. 27. lubáragię terę́gu abą dimúrei, abą labúsuru dunúru lea tų́. 28. lerę́ga tų, "hįáru bugúia aie. 29. madarásaraha uámaia. 30. inira rída," larúhuduní tų. 31. "dabú-ba lídagię dúna líra, *an'* hála bugúia me lídagię tuburébu uéue túra. 32. bacúrai me lídaų dúna, babárihai sú dóbu leá." 33. abą tadógoni. 34. sú dóbu leá buga niéįbai salígua hárigaų grígia me. 35. inúha gię́-ti dunúru túma. 36. tacóloro lúmaų bía lagúmuhaų, tabáricuní-iebe, áhaį salígua lea furúmie tamúlę. 37. tabáricuní lea ábą, áhaį salígua lea ábaia tamúlę. 38. buénu, le taríhi iráho toa sógo funá lau są́ mílu grígia, terę́ga haų, "háiba-ti águiu."

R 1. uáiriai bugá-ti ligíra gumúgua. 2. terę́ga dunúru haų, "murú humái hágu!" 3. hámuruduní. 4. terę́ga, "fégeia humái!" 5. héfegecuní, hábią iáų. 6. taríhunių hagóto, abą hacúbaru tuágu. 7. uél, tábu-ti ábą ugúdani. 8. terę́ga-ti dunúru toa, "cíga humá abą húiu, sé humái me *golden water* leá niéįhį, buná humái me gię tuburébu

singing tree toá" 9. ábą hadógoni. 10. buénu, larúga bináfi terémuha uéue toa máu. 11. tugúia agágudubálią. 12. hásara, háibagua aríha. 13. ábąharu túgucu uéue lúma abą lúguci dúna,—giárati baríhinu biáua niéį.

S 1. uél, hagía niéį, hagía niéį. 2. lagąbati urúei luágu aniáraį lą órua iráhǫią tídą abą múna, toa lárubaų dúna niéį lubái lagánaua leá arúmadahabái, gorágua lįą la hacígo lúmagię niéį hamá, giára la liráhǫią la, ladóga lenégegu la. 3. uél, ítara lagąbuni, ítara leréderuni áurdę lea lícigubái lų lásueragu tuágu úmari toa. 4. úati gię ni darásų, ládinu tídaų likáru abą lídi niéį.

T 1. lacóloro, terę́ga dunúru toa lú, "ibídauga tau bába, aríha humái núma. 2. íneme sá súsuti kátai." 3. ligía libíhi abą pátara ligíbuagu. 4. cúgubai láu, terę́ga lų, "aniáhaį bía hjárių búbię gáfaraháttių. 5. báiba agídaraų hágucu iráhǫią ha lídagię iuíei. 6. lásu harúmaru, biábi anógaua." 7. ládinu gię tidą likáru abą lídi.

U 1. lacóloro lúbię, húduguáina ligía lídi ebégira férudų tų úmari toá. 2. láunagodáti hauágu buga uorįią ha lų hacíbunu. 3. máma-ti tiéregu haų, cibági hamáų-ti, peru ibídięti haų ka la asúserubái luáidi-gia cólo káru háu buga iráhǫią há túma-ti dunúru toa. 4. hebéluru múnadaų, abą hagúaru luagu áigini. 5. le liábi, rúhaią bugá-ti uorįią ha abįąragolei lídaų. 6. haiábi láu, abą táuaru dunúru toa, terę́ga, "baró humái lárigaų, máigibadúa abįąragolei. 7. *in fac'*, dáo-baią bía hjárių hára darí harúga urúei, mabuídutių." 8. ábą hadáorų. 9. ábaia-ti hibíhį ámu áigini túmagię hágucu.

V 1. magúcaru gię-ti hjáru toa tuáigię túgucu. 2. larúga abą tįuiru dunúru toa haų mútu. 3. haiábigiua grígia máu. 4. ladǫ́oro uído sų mútu colóha niéjhę, arąsehagią. 5. tániura hágucu, tiábi tiráo táubagię. 6. haiábiti eiérių láubagię hágucі, dunúru-ti háubagię. 7. ligía terę́gu dunúru, "nidúhęiu, ká sa lerę́gubai urúei hų lubáragiębái laráodu? 8. ma ítara lįą hų, lau furúmie la liráo, niéjbaų la uaruguma luágu terébe?" 9. herę́ga, "ąhą". 10. abą terę́guia dunúru, "fará humái terébe!". 11. le lafáragodonúa, áhaų durųgua uarúguma. 12. háhocaha-ti bía hjárių ha ágodahabáią. 13. terę́gaia, "lea habíama láu niéjbai la háti luágu lerébe?" 14. herę́ga, "ąhą". 15. mereguha-ti urúei ní káta, iníha lau ábą iuánimaguao. 16. terę́gaia, "lea la haórua niéjbai la uéiu luágu lerébe?" 17. herę́ga "áhą". 18. lé lafáragodonúa, sią́ iebe haríhi mútu, sų́-ti hagía maníha-ti. 19. terę́ga, tagáraragų luágu, "éderugu bugúia aie, ibídaugati báu. 20. siąbai lų basúbuserúni lau siá-la haráodų mútu mésu, gábara lúma áųli. 21. manícigutíbu. 22. abą tagáraragų́ hauágu mútu, terę́ga haų, "nidúhęiu, mafíera humá luágu hagąbu, súądą lų hídi lau lea haríhi. 23. lárigię hamúga herę́gu lų lau mésu la liráobai, gáunigi lái hamúga libíama tagóriahą. 24. samína humái tia nerérų. 25. subúse humúti-ti kába la adógua haų?" 26 abą tagáraragu hauágu, "hǫ́horauagúa. 27. larigię, hágudúa me. 28. lárigeę hágudu, lacágarua me hubáligi baránahaų lų mátoro lá. 29. ságo me laiaráfadu lų látoro, lanógoni ébeni lárigaų anágo." 30. hílagubáitiu, peru adóguati gię lea tubálibai dunúru toa. 31. terę́ga-ti, "náibuga, peru uéiu tia látoro habáligi uríbatių há, ligía me tia lagúmucu ubáu." 32. ábą tagúmucagu dunúru toa. 33. gumúgua gię tídibu uéue, gumúgua gáulu. 34. ligíaia lubái anícigu ubáuagu tárigię dunúru. 35. *an'* ligía geę niéį lubái orému huárjurugu tárigię uéue. 36. *an'* ligía gurí-bini lubái gáulu.

W 1. káiburi-ti órua háti luáigię abą láue urúei. 2. larúeha uéiu. 3. bía háti lárigię abą láue uéiu ladǫ́oro sę́go. 4. ligía láfuacubái ladǫ́oro sísi bináfi. 5. larúeha háti. 6. káiburi órua irúmu abą láue háti. 7. láfuaca ladǫ́oro sísi gǫ́iaų. 8. tarúeha uarúguma. 9. káiburi ábą minítu lárigię láuę háti, abą táue uarúguma. 10. ligía, uéiu áfuaca bináfi, háti rabaų-uéiu, uarúguma lárigię. 11. niéį lubái lagúmuca úraga hauágu uríbatių. 12. ligía lubái, mafíera humá tuagu hagąbuni tuái haríhi.

X. Tale of a woman's three children, Hero is the eldest sister's

name, Juana the intermediate one,
Jessie the youngest,—three girls.

A 1. Once upon a time, as it happened these children were sitting on the veranda of their house talking, when three lads passed by, one the king's son, one the baker's son, the other the butcher's son. 2. Then Jessie said: "If I were to get married, I'd like to be married with the king's son." 3. And they laughed. 4. The intermediate one said: "I'd like to get married to the baker's son." 5. They continued laughing. 6. The eldest said: "I'd like to marry the butcher's son, so that I might eat meat." 7. And they almost died laughing.

B 1. Their mother overheard them, their talk ended, and they went into the house in order to do whatever it is that they did. 2. Well, the next morning their mother went to talk to the king, to tell him what it was that her children had said. 3. The king said to her: "Don't fear, they'll obtain their wish. 4. Moreover I'm glad to hear such a thing." 5. And he gave one thousand dollars to the old woman for her to bring up these children.

C 1. When the time came, the king sent letters to the town saying that there were there three children of *Mrs. Willy*, that they should obtain their wish, and making it known what it was that these children would like. 2. The time came when these girls grew up, *and* the thing became a fact.

D 1. It so happened after they were married, about two months later, that the king died. 2. His son sat upon the throne. 3. About two weeks after this girl's accession, her mother died. 4. This being so, the new king reflected to himself that he did not want to beget children without telling the assembly of it. 5. *And* as his wife had need of these children (being nubile of body), he straightway sent letters for everybody to assemble, in order for them to hear the king speak at the stroke of one on Christmas day.

E 1. Well. 2. The time came, and the people gathered *right* in front of the king's house. 3. On the stroke of one, he came out upon the veranda of his house, and said: "My kinsmen, I only have to tell you my conception concerning my children whom God will grant to me. 4. I want only three, two boys, one girl. 5. The first will have a star on her forehead. 6. The second will have a moon on his forehead. 7. The third will have a sun on his forehead. 8. My kinsmen, I have told you of it. 9. I should be glad of your prayers for me. 10. I thank you." 11. The *meeting* ended there, and people went back home. 12. That night, it is then that he set about his task.

F 1. When it came to within two weeks of this woman's confinement, well, this being so, she said to the king: "I want that it shall be my elder sisters who deliver me." 2. He told her, "Send for them." 3. Now surprising as it may be, their younger sister was hated by them, because it was she who was having a child before them. 4. But they didn't show it to her. 5. When the time of this woman's confinement came, when the child emerged, candle-flies were flashing in the house. 6. So taking a cloth they bound up the (child's) forehead. 7. When they had done this, they took the child, put her into a basket, and Hero went and cast her into a river, which carried off the basket. 8. Well, after this had been done, they took a cat, and told the king that here was his daughter. 9. He almost died. 10. Well, then he fell a-weeping. 11. He told them: "Take her to her mother", and they went and gave it to the woman. 12. Here she was in a fright to be sure, but the woman did not know which was her child (the candle-flies had been flashing), and she took it.

G 1. She grew stronger, and was going about again. 2. The cat grew stronger, and went about too. 3. But it did not take three months before the cat was lost. 4. They went almost crazy looking for it. 5. When they found it, it was with its mother and four of its kind. 6. People went yelling to the king, and with them the mid-wives. 7. He said to them, "Are you telling the truth (in saying) that her child is a cat?" 8. They told

him, "Yes." 9. And he knelt down, and said: "My God, in Thee I put my trust." 10. So, when people do evil to thee, do not fear, it will turn back on them.

H 1. Well, a week later, this woman was seen again—full again. 2. When the day came for her to be confined, the same women delivered her. 3. When once more the child emerged, again something flashed. 4. Once more they bound up his head, and Hero went and abandoned it, as she had done with the first. 5. Well, now it became a goat. 6. They took it to the king, who told them, "Take him to his mother." 7. When they came to his mother, she accepted him nevertheless, since she had not seen his face for the flashing of the candle-flies.

I 1. Well, the goat did not stay three days before it ran away. 2. It was searched for. 3. When it was found, it was with a nanny-goat like itself, its mother. 4. The king said about it, "If it should be my destiny, there's nothing to be done about it; but if it should be envy, it will show up." 5. That was done with.

J 1. Well, it was about one week after this woman's 'sweetening' (cessation of post-puerperal menstruation), when she got pregnant. 2. Well, the time of her confinement came once more, when once more this child was seen, even his mother was unable to bear the violence of its ardour and heat. 3. Well, his head was bound once more, and Hero went to cast him away. 4. Well, once more these women took a huge dog to the king. 5. He told them, "I'm pleased with him." 6. And the mid-wives laughed. 7. They turned round, and went and gave him to his mother.

K 1. The dog spent only one day, then ran away. 2. That it should run away, well it was not its mother anyway. 3. The king reflected to himself, he said, "I'll ask this woman why it is that she doesn't know her (own) children." 4. And he called to her and to those who delivered her. 5. He seated them, and said to her, "What did you see when you gave birth?" 6. She told him, "The first, there was flashing. 7. The second, again there was flashing, but cold. 8. The third, there was flashing, but stinging—and hot." 9. And he shook his head, and wept. 10. He said, "In that case, you (must) suffer (for it)". 11. And he gave orders that the woman be taken to the roadside, and that there be no passer-by who did not spit upon her. 12. Then the mid-wives laughed at her. 13. Well, after this had been done, he again gave orders that the woman be bound. 14. And they bound her to a post. 15. All passers-by spat on her. 16. People didn't want to, but there were soldiers there to make them do it. 17. Well, before two months had passed, the filth reached up to her knees.

L 1. All the time that the mid-wives had been doing this, God must have been with these children. 2. There was an old man dwelling beside this river, in order to clean the bridge in time of flood. 3. All this time since the baskets had been released, he had not yet come there. 4. Then when the old man was there doing his work, he saw all three baskets coming. 5. He said to himself, "What an odd thing. 6. Long as I have been here I never saw anything like it before." 7. And he stood up. 8. The baskets were coming right in front of him in the current of the river, then they turned toward him. 9. He was about to run from them, when at the same moment his wife arrived thither. 10. He told her, "Look!" 11. She said to him, "God's gift to us. 12. Take them!" 13. And he took them. 14. When he opened them, (there were) three children (with) bound heads. 15. And they took them to their home. 16. When they took them out of the baskets, she said to her husband, "Didn't I tell thee?". 17. And they brought them up.

M 1. When they had grown, weren't they clever! 2. And the old people were unwilling for them to work. 3. It was they again did every job. 4. And there they were (i.e. time passed). 5. The time came when the old man who had adopted them died. 6. How the children cried! 7. They buried him, yet afterwards they missed him. 8. And there

they were. 9. And the children grew up. 10. One day the youngest dreamt that the old man who had adopted them said to him that he was going to show him where the world's wisdom was. 11. And he went with him, he said, that he might show him everything. 12. And he woke up. 13. But the lad was unable to go there where the old man had shown him, for the world is other in dreams than when you get up.

N 1. Well, not yet two weeks had passed, when Wanooi came. 2. She said to the lad, "Didn't you dream?" 3. He told her "yes; thus and thus went my dream." 4. She said to him, "tomorrow, you'll tell it to your siblings. 5. Afterwards, you'll tell your grandmother to bake unleavened bread for you. 6. When she's finished, you'll mount your mare, you'll take the road behind your house, you'll follow it. 7. But before you go, you must give this knife to your grandmother." 8. And she gave him a knife. 9. "You'll tell her that when blood drips from off it, you'll be dead. 10. He told her "Thank you", and she went away.

O 1. Everything that she had told him to do, he did it. 2. The next day, he took his unleavened bread and mounted his mare and left. 3. He journeyed on and on. 4. Upon its being two days, he met with (a) beard. 5. He took out his scissors and began to shear. 6. He sheared and he sheared. 7. When two hours had passed, he came up with an old man just standing (there). 8. The latter said to him, "My son, where art thou going?" 9. He told him, "I'm going to look for the world's riches." 10. The old man said to him, "My son, go. 11. Here is a ball of thread, throw it before thee. 12. There where it stops, there thou'lt dismount. 13. But do not turn thy head to the rear, *no matter* what it be that thou hearest, understood?" 14. "Thank 'ee grandfather", and he went on. 15. The ball of thread stopped, he dismounted from his horse, and walked. 16. He walked on and on. 17. Suddenly he heard people saying, "Kill him!" 18. Still he didn't turn, and he heard, "Spear him!", and he turned his head. 19. And as he turned, he was changed into a stone.

P 1. Well, when two years had passed, the old woman went to see the knife. 2. Blood poured from off it, and she sat down and wept. 3. His siblings were out hunting. 4. When they arrived, they said, "We heard our junior's voice in the woods." 5. "Tomorrow I'm going to look for him," said the intermediate brother. 6. The morrow came, there was no hindrance, his unleavened bread was baked, and he left. 7. He journeyed on and on. 8. When the beard was met with once more, again he took out his scissors and sheared. 9. He came up with the old man, who said to him, "A lad came hither a year or so past, just like thee." 10. The lad said to him, "Where is he?" 11. He told him, "He said he was going to look for the wisdom of the world. 12. But if thou shouldst be going after him, take this ball of thread. 13. Thou'lt cast it before thee, and there where it stops, there thou'lt dismount from thy mare. 14. But if thou hearest voices, don't turn round." 15. The lad said "Thank 'ee", and went on. 16. He followed the ball of thread, and when it stopped he dismounted and walked. 17. Suddenly he heard a voice say: "Seize him, wring his neck." 18. As he was turning around to look, he was transformed into a stone.

Q 1. Well, when this had happened, eight months passed, then the old woman went once more to look at the knife. 2. My word what blood there was once more. 3. The old woman sat down, and again she wept. 4. Then the sister said to her, "Grandmother, if after all there were no God in heaven. 5. I'm going to look for my younger brothers." 6. The old woman told her, "Go ahead, my child, the road is clear before thee." 7. Her unleavened bread was baked, she mounted her mare, and left. 8. She journeyed on and on. 9. Then she met with the beard. 10. Taking her scissors, she sheared and she sheared. 11. When she came up with the old man, even before she had said a word, the old man said to her, "Ooh! 12. Isn't that an odd thing.

13. Aren't they thy kinsmen, those two lads who came hither in months which are of the past?" 14. She said, "It's possible, because they are lost, and I'm going to look for them." 15. And she was about to pass on. 16. And the old man said, "Take this ball of thread, and cast it before thee. 17. There where it stops, there thou'lt dismount from thy mare." 18. She said "Thank 'ee grandfather", and went on. 19. When the ball of thread stopped, she dismounted. 20. Just then the wind was blowing north-east. 21. There was a cotton plant there. 22. She plucked (some cotton), and stuffed it in her ears, and went foreward. 23. All sorts of things were said, she did not hear them. 24. On she went. 25. Then she felt a poke in the back, but she did not turn round. 26. She had not walked fifty yeards, when she saw a bird in a *cage*. 27. Before she had spoken a word, the bird greeted her. 28. It said to her, "Ay, thou'rt a woman. 29. Let us delay no longer. 30. There's a coui (calabash cup)," —showing it to her. 31. Dip us some of that water, *and* break off a branch of that tree. 32. Thou'lt steep it in the water, and sprinkle all these stones." 33. And she did so. 34. All these (past-tense) stones turned back into (future-tense) human beings. 35. And here was the bird together with her. 36. When she came to the last two, as she was sprinkling them, the first turned into her younger brother. 37. As she was sprinkling the other, it turned into her other younger brother. 38. Well, when this girl saw maybe more than a hundred thousand people, she said to them, "Go back home!"

R 1. The old man that had been there had vanished. 2. The bird said to them, "Close your eyes!" 3. They closed them. 4. It said, "Open them again!" 5. When they opened them, they were at their home once more. 6. Their grandmother saw them, and they jumped on her. 7. Well, she was overcome by gladness. 8. The bird said, "Dig a hole, and pour the *golden water* into it, and also plant the branch of *singing tree*. 9. And they did so. 10. Well, the next morning the tree sang marvellously. 11. That was what woke them up. 12. They got up, and ran to look. 13. It had become a huge (lit. mother) tree and a huge (lit. father) pond (lit. water),—you were able to see your reflexion in it.

S 1. Well, there they were, and there they stayed. 2. The king heard that there were three children in a house there, that by the riverside where the sweeper dwelt, that their heads were bound since ever they were there, and that possibly they were his children, because they resembled him. 3. Well, this is what he heard, so he cancelled the order that he had given that this wife should be spat upon. 4. And nothing hindering him, he 'embarked' in his car and went there.

T 1. When he arrived, the bird said to him, "Father of foolishness, just look at him. 2. What extraordinary stupidity. 3. Then he got a slap on his face. 4. When he came to his senses, she (the bird) said to him, "There are two women at your home who are murderers. 5. Go and release these children's mother from the filth. 6. When they've finished cleaning her, thou'lt come and fetch us. 7. So he got into his car and left.

U 1. When he arrived at his home, he went to beg this wife's pardon on his knees. 2. He sent for these women for them to wash her. 3. Although she was hated by them, they washed her nevertheless, but they didn't know what happened except that their car arrived with the children and the bird. 4. They came into the house, and called for food. 5. When it came, these women had put poison (or magic potion) into it. 6. Bird came with it, and the bird called out, saying: "Take it back, we will not eat poison. 7. *In fact*, lock those two women up until tomorrow king, they're not good." 8. And they were locked up. 9. And they got other food again from their mother.

V 1. The girl was inseparable from her mother. 2. The next day the bird whistled to the people. 3. My word how people kept coming. 4. On the stroke of eight everybody had arrived there, they were ready. 5. Their

mother sat down, her daughter came to her side. 6. The boys came to their father's side, the bird was beside them. 7. Then the bird said: "My kinsmen, what did the king tell you before begetting (children)? 8. Didn't he tell you thus, that the first to be his child, there would be a star upon her forehead?" 9. They said, "Yes." 10. And again the bird said, "Unbind her forehead!" 11. When it had been unbound, the star shone forth. 12. The two women that were mid-wives trembled. 13. She (the bird) said again: "The second, there would be a moon upon his forehead?" 14. They said, "Yes." 15. The king said nothing, he was quite overcome by faintness. 16. She (the bird) said again: "The third, that there would be a sun upon his forehead?" 17. They said "Yes." 18. When it had been unbound, people were unable to look even, all of them fell silent. 19. She (the bird) said, turning upon him, "Ay thou arse, great ignoramus. 20. That thou shouldst be unable to know that people cannot beget cats, goats and dogs. 21. Thou'rt witless. 22. Then turning to the people, she said to them: "My kinsmen, don't trust what you hear, you must always go on what you see. 23. After they had told him that his child was a cat, he should have paid attention to the second one she bore. 24. Consider my words. 25. Do you know what will be done to them?" 26. And turning upon them, "You'll be shot. 27. Afterwards, you'll be burnt. 28. After you've been burnt, your ashes will be scattered in the sea so that they may not land. 29. Each time that they approach in order to land, the tide will take them back out to sea." 30. They were mortally afraid, but it was done according to the bird's sentence. 31. She (the bird) said, "I'm going, but the day when those wicked ones' ashes land, that will be the end of the world." 32. And the bird vanished. 33. The tree vanished too, and also the gold. 34. And so it is that there is wisdom on the word since after the bird. 35. *And* so it also is that there are songs in the clouds since after the tree. 36. *And* so it is gold is in the depths.

W 1. About three months from then the king died. 2. Sun acceded. 3. Two months afterwards sun died on the stroke of five. 4. And so it is that he emerges on the stroke of six in the morning. 5. Moon acceded. 6. About three years (later), and moon died. 7. He emerges at the stroke of six in the evening. 8. Star acceded. 9. About one minute after moon's death, star died. 10, So, sun emerges in the morning, moon in the afternoon, star afterwards. 11. There it is that the story of the wicked ones ends. 12. And so, do not trust in what you hear more than what you see.

This tale—which is, like almost all those I heard from the Black Carib, of Old World provenance—was taken down from the dictation of my eighteen-year-old assistant, who had it from his grandmother. Though the latter was too old and unwell to see me, she retold it to her grandson, at my request, immediately before the recording was begun. This circumstance may account for what is perhaps a greater than usual mixture of innovations with obsolescent forms. For example, my assistant (and many other young men of his age) normally said arúfuda *to show*, fuí-bai *throw it (down)*, agáragua *to turn (the body) round*, instead of more conservative arúhuda, huí-bai, agáraragua, as in this text; while apparently the word gunúrima *ball of thread* had had to be explained to him by the phrase lébu fílu *its-support thread*, whose last word is an obvious loan. On the other hand, older speakers usually still use ugúnei *boat* also for *motor-car*, for which my text has more modern káru. Whether such foreignisms as *and*, *right*, *meeting*, *no matter*, *cage*, *in fact* were or were not introduced by my young assistant I cannot say; but his indifferent use of (men's) uóri, (women's) hi̯áru, for *woman*, and (men's) uogóri, (women's) eiéri, for *man*, is certainly due to his confusion of usage.

These words have a much wider inclusiveness than is indicated by the above English translations, meaning, respectively: *woman*,

female, girl and *man, male, boy*. Similarly, iráho ~ -iráo, which has common gender, is translatable, according to context, by *child, girl, boy, young (of animals), little one*, or, in possessed forms, *son or daughter*, and in its reference to people is applicable to babies or to young men and women up to at least 25 years of age. On the other hand, old people are usually referred to as uáiriau (± mútu *person*) *old woman* and uáiriai (± mútu) *old man*. The word métu *person or people* (cf. French Creole mun, with the same meaning, Bantu muntu *person*) is replaceable in some contexts by grígia *people, human beings* (cf. Lokono kirikia *people of one's own tribe or nation*). Although they belong to the kinship terminology, such forms as: iáu *uncle (mother's brother)*, náruguti *my grandfather*, nagóto *my grandmother*, niráo *my son or daughter*, nidúhe (pl. nidúhẹiu) *my kinsman or kinswoman*, náti *my brother*, nítu *my sister* are commonly employed as polite forms of address between even complete strangers whose relative ages are more or less appropriate. Examples will be found throughout this tale. The terms for mother and father I have not heard so used, but these are employed, as in R 13, to express great size; as are also the grandparent terms (v. abą lagóti áųli *a his-grandmother dog = a huge dog*, in J 4). Moreover, *my thumb* is expressed as lúguci núhabu *his-father my-hand*, while the *fingers* are the *hand's children*.

Although the tale is comparatively short (and shows signs in several places of having been curtailed; those told by men at ninth-night wakes are very much longer as a rule), it seems too long to warrant taking up the extra space that multiple translation would require. The translation as given is therefore a compromise, being always as close as—and sometimes closer than (v. E 12, F 1, I 2, J 1, et passim)—English usage allows. Some of the sentences and many phrases from this tale have been analysed in preceding sections; and only a few special points of interest will be mentioned below.

As we have seen, some forms of this language have a much wider inclusiveness than any English "equivalent". Some, on the other hand, have a much narrower inclusiveness. So, for example, compare (R 2 & 4): murú humái hágu *close your eyes* (more literally, *tight do-ye-it your-eye*) and: fégeia humái *open them again* (lit. *open-by-putting-aside-again do-ye-it*) with: darú humiá béna *close the door* and dará humái béna *open the door*, and the latter with: lugú humái hiámadi *open up your travel-baskets* (this latter also including the concept *and take the things out of them*). Similarly, agára(ra)-gua means *to turn (the body) round*, adígira-gua *to turn (the head) round*, atígira *to twist or wring (the neck)*, only the last being transitive; and there are different words for *to turn round (like a top)*, *to turn round (like a wheel)*, *to turn over*, *to turn toward* (v. L 8), *to return (come back)*, *to return (go back)*, etc. On the other hand, hálao (D 2) does service for *chair, bench, stool, throne*; abúda (L 12, 13, M 5, 10) for *to pick or take up* as well as *to adopt*. The word bíbirigu is translated *thy siblings* in N 4, since the one addressed is the youngest child; but its more usual meaning is *thy juniors (younger siblings)*; this may be a slip on the part of the raconteur. The phrase néiu fédu (D 5) has been translated *Christmas day*, since Christmas is called fédu; however, this word, borrowed from Fr. fête, is also applied to any *holiday*. Borrowed dén (Eng. then) and native (?) máu ~ màuó are particles (or interjections) emphasizing what has gone before (v. Q 2 & P 9 for the former, M 6, R 10 & V 3 for the latter); íneme (F 3 & T 2) expresses surprise or dismay.

Readers may notice, as I did on going over the recording with my assistant, that dunúru *bird* is masculine in Q 27, but feminine in Q 35 (lit. *she-is-her also bird with-her*) and thereafter. The explication is as follows:—The word dunúru *bird* (and the names of most species of birds), though theoretically of common gender, is normally treated as feminine; and while the magical bird of the

tale, which talked, was supposedly male, my informant, after once indicating the fact in Q 27, relapsed from habit into employing feminine reference to the noun dunúru *bird*. Another apparent inconsistency is seen in A 4 & 6, where we find the same words pronounced nabúseru and namáredu in the former, nabúsueru and namáriedu in the latter sentence. These are verbal nouns (*my wanting, my getting married*) from the indefinite verbs abús(u)era *to want* and amár(i)eda *to get married*, whose borrowed bases, busuę (Fr. besoin) and marie (Fr. marié or marier) are both particles. The formation of the latter verb may be compared to that of aráoda *to get progeny* (of father or mother), whose base is contained in nominal iráho ~ -iráo (see above). The nominalized form of this verb occurs in D 4 and V 7, the denominal attributive particle, garáo *having progeny*, in F 3.

The freedom with which speakers of this language convert any word into an aspectual verb, any indefinite verb into a verbal noun, and any noun (verbal or other) into an attributive or a privative particle, is one of its most striking characteristics. So, in H 5, abą *one, a* is verbalized as ábąhalí-ti (gábara) *a-perfective-it* (*goat*) = *it has become a goat*. In B 5, abą lícigu *and his-giving* = *and he gave*; and similarly after the aorist verbs, gudátina nagąbu *I'm-glad my-hearing* = *I'm glad to hear* in B 4, and giárati barihinu *it-is-possible thy-seeing-it* = *thou'rt able to see* in R 13, the correlated activities of hearing and seeing are of necessity expressed in nominalized form. Thus some constructions defy anything like a literal translation; cf. second and third clauses of K 17: *not-taking-durative-it two moon/month, it-upon-perfective-it her-knee dirty*, or the first part of R 13: *one/a perfective-it its-mother tree with-it one/an its-father water/river*.

Plurality of inanimate objects may be a matter of indifference, as in the case of gárada *letter(s)* in C 1 and D 5, or be indicated by a numeral as in the second clause of L 4 (*it-is-then his-seing-it its-coming basket this three-completive*), or by the sense alone, as in the utterances cited above from R 2 & 4 meaning *close your eyes* and *open them again*.

A noun may be predicative, as in the case of hináro *your truth* = *ye are telling the truth* (v. G 7), or in that of benége *thy resemblance* = *resembles thee* (v. P 9). The latter also occurs in collective form, lenégegu *his-resemblance-collective* = *they resemble him* (v. S 2), in the phrase ladóga lenégegu la *because they resemble him*, in which the concept *because* is expressed by the indefinite verb ladóga *it does/makes*. These and such other expressions as repeated hagía niéį *it-is-they there* (v. M 4 & S 1) = *time passed and they were still there*, and ligía luágu mábu *it-is-he upon-it journey* (v. 0 3) = *he journeyed on and on*; or úatu kátaų tuágu *it-is-no/none what's-it upon-it* (v. I 4) = *there's nothing to be done about it*, are perhaps best regarded as idioms.

THE TONAL SYSTEM OF A THIRD MIXTEC DIALECT

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0. Introduction
1. Basic tonemes
2. Tonal perturbation
3. Verbs
4. Pronouns
5. Non-phonemic tonal phenomena

0. This paper is in the nature of a continuation of my previous paper,[1] adding a third Mixtec dialect to the two previously compared. Mixtec is characterized by numerous divergent dialects. The mountainous topography of the region, and the relatively autonomous life of its widely separated communities, have no doubt contributed to the present diversity even in neighboring villages. While on first inspection there seems to be a good deal of intercommunication in that the Indians travel extensively, carrying their scanty products for sale in neighboring markets, closer analysis reveals that communication is largely superficial, consisting only of contact on a trade basis, and not extending into intimate life situations.

The dialects of San Miguel el Grande and of San Esteban Atatláhuca, the first and second Mixtec dialects to be analyzed, are considerably divergent in their patterns of tonal perturbation. This paper will add the tonemic analysis of yet a third dialect to the two previously described, that of the town of Santo Tomás Ocotepec, situated at a distance of approximately five hours by foot trail northwest of the municipal center of San Esteban.[2]

1. Toneme levels for all three dialects will be symbolized in this paper by superscript numbers 1 (the highest level) to 3 (the lowest level) for the SM and ST dialects, which have 3 levels of phonemic tone; and 1 to 4 for SE, which has 4 levels of phonemic tone. Note carefully that SE toneme 3 is an additional intermediate toneme between what corresponds to SM and ST tonemes 2 and 3, and SE toneme 4 corresponds to SM and ST toneme 3. The additional toneme in SE occurs basically only in a limited list of morphemes with pattern 1-3. However, SE toneme 3 occurs very extensively when the basic tonemes are perturbed in sandhi or in certain grammatical constructions.

The ST dialect, in common with SM, has three phonemic tone levels (tonemes). These yield the following possible tone couplets:[3] 1-1, 1-2, 1-3; 2-1, 2-2, 2-3; 3-1, 3-2, 3-3. Each of these nine tone couplets occur in ST. This is in contrast to SM and SE, where the 3-3 (or *4-4 for SE) couplet does not occur. The 3-3 tone couplet is a reflex not basic to

[1] A Comparison of Two Mixtec Tonemic Systems, IJAL 19: 85–100 (1953), a paper which compares the tonemic systems of the dialects of San Miguel el Grande and San Esteban Atatláhuca, located approximately two hours walking distance apart. For a description of the tonal system of San Miguel, see also: Kenneth L. Pike, Tone Languages, University of Michigan Publications, Linguistics IV, (Ann Arbor, 1948), 77–94.

[2] Names of the three towns are abbreviated in this paper as follows: Santo Tomás Ocotepec, ST; San Esteban Atatláhuca, SE; San Miguel el Grande, SM. The data for this paper were secured during field trips under the auspices of the Summer Institute of Linguistics during the years 1954 to 1956, in collaboration with Ruth Mary Alexander who checked with me the tonal glides, extremely difficult to hear, which develop in the completive aspect of verbs. I am also indebted to Kenneth L. Pike and Viola Waterhouse for help in editing the paper.

[3] See Kenneth L. Pike, op. cit., pp. 79–81, for description of the disyllabic character of Mixtec morphemes, with their two units of tone, called tone couplets.

Mixtec. Longacre[4] reconstructs no proto-Mixtec tone couplet with two low tonemes. Morphemes in ST which have a basic 3-3 tone couplet comprise the largest portion of those which in SM have 2-3, and in SE either 2-2 or 2-4 couplets. Compare the following:[5]

ST nu^{3}ni^{3}, SM nu^{2}ni^{3}, SE nu^{2}ni^{4} *corn*; ST tą^{3}tą^{3}, SM ta^{2}na^{3}, SE ta^{2}Na^{4} *medicine*; ST mi$^{?3}$nte^{3}, SM bi$^{?2n}$ja^{3}, SE bi$^{?2n}$de^{4} *nopal cactus*; but: ST ñu^{2}u^{3}, SM ñu^{2}u^{3}, SE ñu^{2}u^{2} *town, city*; ST sa^{2}a^{3}, SM tə^{2}sa^{2}a^{3}, SE sa^{2}a^{2} *bird*; ST ñų$^{?2}$ų^{3}, SM ñų$^{?2}$ų^{3}, SE ñų$^{?2}$ų^{4} *fire*.

2. In the ST dialect, perturbation is much less extensive than in the two previously studied systems. However, non-phonemic tone modifications and optional or irregular perturbation complicate the picture, as they do also in SE. In SM there is automatic type (b) perturbation (to higher tone levels) in all syntactic constructions, following certain members of all tone couplet classes except 3-2, 2-1 and 1-3; the category of each morpheme in respect to whether or not perturbation takes place after it, must be memorized.[6] In SE there is automatic type (b) perturbation (to higher tone levels), type (c) perturbation (to lower tone levels), and also a special perturbation in certain grammatically close-knit sequences, called SPECIAL SEQUENCES.[7] The ST dialect, however, admits perturbation only in such special sequences. The special sequences with which these perturbations are found are substantially as in SE: 1. noun + descriptive adjective; 2. head noun + noun or (rarely) verb acting as descriptive modifier; 3. locational or introductory noun + noun or dependent clause; 4. head verb + noun modifier.

Special sequences of ST verb auxiliary + main verb are treated separately in this study because their tonal action is in some cases distinct from that of other special sequences.

Most of the morphemes which act as locationals or clause introducers in special sequences are body parts; when they occur as the first member of a special sequence they may be translated by English prepositions. They are listed here with both their primary meanings and their preposition-like meanings when occurring in special sequences: nu^{3}u^{3} *face, eye* ~ *to, at, where*, si^{3}ki^{3} *spine* ~ *on top of, against* (*someone*), he$^{3?}$e^{3} *foot* ~ *at the fool of, in behalf of*, žu$^{2?}$u^{1} *mouth* ~ *at the mouth of*, ža^{3}ta^{3} *back* ~ *back of, outside*, $^{?}$i^{2}či^{2} *road* ~ *toward, to or from the direction of*.

One morpheme is limited to the position of introducer of a dependent clause: ha^{3}a^{3} *that, that thing*; in SE and SM this morpheme always causes perturbation of certain tone couplets; in ST it consistently perturbs some tone couplets, optionally perturbs others, and does not perturb others.

As in SE, there are a few such locational or introductory morphemes which constitute a sub-group following which perturbation does not occur. They are: $^{?}$i^{2}ni^{3} *in, inside*;

[4] Robert E. Longacre, Proto-Mixtecan, Publication No. 5 of Indiana University Research Center in Anthropology, Folklore, and Linguistics (1957). The ST data were not available to him when he made this comparative study.

[5] The phonemes of the ST dialect are as follows: voiceless unaspirated stops /p, t, č, k, k^{w}, ?/(/?/ usually very lightly articulated; all others voiced in clusters after nasals); fricatives /b, d, h/ (/b and h/ very lightly articulated); sibilants /s, z, š, ž/ (/z/ has acquired phonemic status in this dialect through the loss of n from the phonetic cluster [nz], leaving s and z in contrast; see **3**); nasals /m, n, ñ/ (/n/ has allophone [ŋ] in clusters before /k, k^{w}, h/); liquid /l/; oral vowels /i, e, a, o, u/; nasalized vowels /į, ę, ą, ǫ, ų/; semivowel /y/ (occurring only as second member of a morpheme initial consonant cluster); tonemes /1, 2, 3/ as described in **1**.

The SM and SE vowels /ə/ and /ə̨/ do not occur in ST, where they merge with the /i/ and /į/ vowels; SE /N/ does not occur in ST. SM and SE unit phonemes /^{m}b, ^{n}d, ^{n}j and ^{ŋ}g/ are treated as clusters /mp, nt, nč, nk/ in ST, because in addition to their frequent occurrence within the morpheme, the latter three also occur inter-morphemically; cf. **3**.

[6] See Pike, op. cit., pp. 77–8.

[7] See Mak, op. cit., pp. 88–95.

$\check{c}i^{3}hi^{2}$ *abdomen, inside of, underneath*; $hi^{2}\check{z}o^{2}$ *by the side of*; $la^{1}do^{3}$ *one side of* (Span. lado).

As in SE, it is difficult to make a neat listing of the special sequences in terms of perturbation occurrence. In some special sequences, perturbation is predictable and regular. In other grammatically parallel sequences, perturbation takes place optionally or not at all, or results in different developed couplets from the regular pattern. Thus, there are many sub-groupings and alternants in the resultant tone patterns. One has the impression that tonal perturbation in special sequences is in a state of flux, being a remnant of an earlier more regular and extensive perturbation pattern in either special sequences or in all syntactic environments.

For ST, then, we may state that, aside from irregularities, morphemes in each tone couplet pattern which occur as the first member of a special sequence may cause tone perturbation of following morphemes, as discussed below. Whereas in the other two dialects the category of each morpheme in respect to perturbing influence must be memorized, in ST all of those morphemes occurring as the first morpheme in a special sequence potentially have the power to perturb, with the above reservations.[8]

The nine basic tone couplets of ST fall into six groups according to how their initial tonemes are perturbed when these couplets occur as the second member of a special sequence. The pattern of perturbation of the second morpheme in a special sequence depends for the most part on the final toneme of the preceding morpheme and on the initial toneme of the morpheme being perturbed.

The patterns of perturbation in special sequences are given below.

If 1-1 is the second tone couplet in a special sequence, its first toneme is subject to being perturbed to lower, following tone couplets with final toneme 3, resulting in developed couplet 3-1.

If 1-2 or 1-3 is the second tone couplet in a special sequence, no perturbation occurs.

If 2-1 or 2-2 is the second tone couplet, their first tonemes are perturbed to lower, following tone couplet 3-3 only, resulting in developed couplet 3-1.

If 2-1 or 2-2 is the second tone couplet, their first tonemes are perturbed to higher, following tone couplets with final toneme 1 or 2 (except after 3-2), resulting in developed couplet 1-1, but 2-2 becomes 1-2 after 1-1.

If 2-3 or 3-3 is the second tone couplet, their first tonemes are perturbed to higher, following tone couplets with final toneme 1, 2 or 3, resulting in developed couplet 1-3, but 1-1 after some final 2, and 3-1 after some final 2 and 3.

If 3-1 or 3-2 is the second tone couplet, their first tonemes are perturbed to higher, following tone couplets with final toneme 1, 2 or 3, resulting in developed tone couplets $1\text{-}^{3}1$ and $1\text{-}^{3}2$, respectively. (One-syllable tone glides abstracted from their vocalic elements are shown with the second toneme raised.)

As the second tone couplet in a special sequence, couplet 1-1, having no higher possibilities, can only be perturbed to a lower couplet. Couplets 1-2 and 1-3[9] are never perturbed, being stable in all environments. The first syllables of couplets 2-1 and 2-2 are perturbed to lower after couplet 3-3 and to higher after couplets with final tonemes 1 or 2 (except couplet 3-2). When the first syllable of the 2-2 couplet is perturbed to either higher or lower, its second syllable is in most instances also perturbed, so that toneme 2 of the second syllable $>$ 1; thus 2-2 perturbed to lower $>$ 3-1, and 2-2 perturbed to higher $>$ 1-1. The remaining basic tone

[8] In this paper I continue to use 'cause and effect' terminology in describing the phenomena of tonal perturbation, i.e. the substitution of one toneme for another when following certain morphemes, though I am aware of possible objections to the use of such 'process' terminology.

[9] Most morphemes with basic 1–3 tone couplets are Spanish loans (there are a few exceptions). In SM, Spanish loans carry 2–1 tone couplets and in SE they carry 1–1 tone couplets.

couplets, i.e. 2-3 couplets and those with initial toneme 3, are usually perturbed to higher couplets, with a few exceptions where 2-3 and 3-3 > 3-1. When the first syliable of patterns 3-1 and 3-2 is perturbed to 1, there is a very pronounced glide back to the basic 3 toneme. The 3-3 couplet, however, does not have this glide back to basic toneme 3. We have already seen that this couplet is a reflex of SM 2-3 and SE 2-2 or 2-4 (see **1**). It is here grouped with the 2-3 couplet because, in keeping with its historically initial 2 toneme, its developed couplets are the same as those of the 2-3 couplet, and it does not glide back to 3 as do the other couplets with initial 3 toneme.

We now list examples of these perturbations in special sequences for the particular combinations of tone couplets for which we have encountered this perturbation; other combinations either do not occur or might be found to round out the theoretical possibilities. In parentheses following each of the combinations are shown their SE and SM combinations involving either cognates or lexically equivalent items. Where we have examples of irregularities, these are listed under their corresponding tone couplet combinations. If we have more than one example of an irregular combination, we indicate this by 'etc.'

Couplet 1-1, perturbed to lower:

1-3 + 1-1 > 3-1: ka^{1}ži^{3} *street* (Span. calle) + ka^{1}ni^{1} *long* > ka^{1}ži^{3} ka^{3}ni^{1} *long street* (SE: ka^{1}ži^{1} + ka^{1}ni^{2} > ka^{1}ži^{1} ka$^{2\text{-}1}$ni^{2}; SM: ža$^{?3}$ža^{2} + ka^{1}ni^{2} > ža$^{?3}$ža^{2} ka^{1}ni^{2}). But: mar^{1}ku^{3} *doorcase* (Span. marco) + bye$^{1?}$e^{1} *door* > mar^{1}ku^{3} bye$^{1?}$e^{1} *doorcase* (SE: sǫ$^{2?}$ǫ^{4} *post* + že$^{?1}$ži^{1} *door* > sǫ$^{2?}$ǫ^{4} že$^{?3}$ži^{1}; SM: či^{2}ča^{3} *post* + žu^{2}še$^{1?}$e^{1} > či^{2}ča^{3} žu^{1}še$^{1?}$e^{1}).

2-3 + 1-1 > 3-1: ku^{2}nte^{2}e^{3} *sit* + si$^{1?}$i^{1} *female* > ku^{2}nte^{2}e^{3} si$^{3?}$i^{1} *sit like a lady* (i.e. *on the knees*) (SE: ko^{2n}de^{3}e^{2} + sə$^{1?}$ə^{1} > ko^{2n}de^{3}e^{2} sə$^{3?}$ə^{1}; SM: ku^{2n}de^{2}e^{2} + sə$^{1?}$ə^{1} > ku^{2n}de^{2}e^{2} sə$^{1?}$ə^{1}).

3-3 + 1-1 > 3-1: ta^{3}či^{3} *wind, spirit* + ka$^{?1}$nu^{1} *large* > ta^{3}či^{3} ka$^{?3}$nu^{1} *Satan* (SE: he^{2}e^{4} *that thing* + šę^{2}ę^{4} *fierce* > he^{2}šę^{3}ę^{1} *Satan*; SM: ta^{2}či^{3} + ña$^{?1}$nu^{2} > ta^{2}či^{3} ña$^{?1}$nu^{2}).

After a few 3-2 couplets, 1-1 > 3-1: žu^{3}te^{2} *river* + ka^{1}ni^{1} *long* > žu^{3}te^{2} ka^{3}ni^{1} *long river* (SE: žu^{4}te^{2} + ka^{1}ni^{2} > žu^{4}te^{2} ka^{1}ni^{2}; SM: žu^{3}ča^{2} + ka^{1}ni^{2} > žu^{3}ča^{2} ka^{1}ni^{1}). But: sį$^{3?}$į^{2} *leg* + ka^{1}ni^{1} *long* > sį$^{3?}$į^{2} ka^{1}ni^{1} *long leg* (SE: sǫ$^{4?}$ǫ^{2} + ka^{1}ni^{2} > sǫ$^{4?}$ǫ^{2} ka^{1}ni^{2}; SM: sǫ$^{3?}$ǫ^{2} + ka^{1}ni^{2} > sǫ$^{3?}$ǫ^{2} ka^{1}ni^{2}); etc.

Couplet 2-1, perturbed to lower:

3-3 + 2-1 > 3-1: ši^{3}ta^{3} *tortilla* + ?i$^{?2}$ni^{1} *hot* > ši^{3}ta^{3} ?i$^{?3}$ni^{1} *hot tortilla* (SE: sta^{2}a^{4} + hi$^{?2}$ni^{1} > sta^{2}a^{4} hi$^{?2}$ni^{1}; SM: sta^{2}a^{3} + ni$^{?1}$ni^{1} > sta^{2}a^{3} ni$^{?1}$ni^{1}).

Couplet 2-2, perturbed to lower:

3-3 + 2-2 > 3-1: ža^{3}ta^{3} *back* + be$^{2?}$e^{2} *house* > ta^{3}be$^{3?}$e^{1} *outside the house* (SE: nu^{2}u^{4} *at, where* + be$^{2?}$e^{2} (?) *house* > nu^{2}u^{4} ke$^{2\text{-}1?}$e^{2}; SM: ža^{2}ta^{3} + be$^{2?}$e^{2} > ža^{2}ta^{3} be$^{1?}$e^{2}). But: ši^{3}ni^{3} *head* + ka^{2}ba^{2} *rock* > ši^{3}ni^{3} ka^{2}ba^{2} *top of the rock* (SE: ši^{2}ni^{4} + ka^{2}ba^{2} > ši^{2}ni^{4} ka$^{2\text{-}1}$ba^{2}; SM: ši^{2}ni^{3} + ka^{2}ba^{2} > ši^{2}ni^{3} ka^{1}ba^{2}).

Couplet 2-1, perturbed to higher:

1-1 + 2-1 > 1-1: bye$^{1?}$e^{1} *door* + he^{2}e^{1} *new* > bye$^{1?}$e^{1} he^{1}e^{1} *new door* (SE: že$^{?1}$ži^{1} + he^{2}e^{1} > že$^{?1}$ži^{1} he^{1}e^{1}; SM: žu^{2}še$^{1?}$e^{1} + ha^{1}a^{1} > žu^{2}še$^{1?}$e^{1} ha^{1}a^{1}).

2-1 + 2-1 > 1-1: ñį$^{2?}$į^{1} *hen* + lu^{2}li^{1} *little* > ñį$^{2?}$į^{1} lu^{1}li^{1} *little hen* (SE: ñǫ$^{1?}$ǫ^{1} + lu^{2}li^{1} > ñǫ$^{1?}$ǫ^{1} lu^{1}li^{1}; SM: ñį$^{1?}$į^{1} + lu^{1}li^{1} > ñį$^{1?}$į^{1} lu^{1}li^{1}).

3-1 + 2-1 > 1-1: su^{3}či^{1} *child* + ñį^{2}kį^{1} *of tender age* > su^{3}či^{1} ñį^{1}kį^{1} *infant* (SE: su^{4}či^{1} + žǫ^{2}kǫ^{1} > su^{4}či^{2} žǫ^{1}kǫ^{1}; SM: su^{3}či^{1} + žǫ^{1}kǫ^{1} > su^{3}či^{1} žǫ^{1}kǫ^{1}).

1-2 + 2-1 > 1-1: sto$^{?1}$lo^{2} *rooster* + k^{w}į^{2}hį^{1} *white* > sto$^{?1}$lo^{2} k^{w}į^{1}hį^{1} *white rooster* (SE: li$^{?1}$li^{3} + k^{w}į^{1}hį^{1} > li$^{?1}$li^{3} k^{w}į^{3}hį^{1}; SM: li$^{?1}$li^{2} + k^{w}į^{1}hį^{1} > li$^{?1}$li^{2} k^{w}į^{1}hį^{1}).

2-2 + 2-1 > 1-1: ži^{2}ki^{2} *bone* + žu$^{2?}$u^{1} *mouth* > ži^{2}ki^{2} žu$^{1?}$u^{1} *jaw bone* (SE: žə^{2}kə^{2} + žu$^{2?}$u^{2} > žə^{2}kə^{2} žu$^{2\text{-}1?}$u^{2}; SM: žə^{2}kə^{2} + žu$^{2?}$u^{2} > žə^{2}kə^{2} žu$^{1?}$u^{1}). But: be$^{2?}$e^{2} *house* + lu^{2}li^{1} *little* > be$^{2?}$e^{2} lu^{2}li^{1} ~ lu^{1}li^{1} *little house* (SE: be$^{2?}$e^{2} + lu^{2}li^{1} > be$^{2?}$e^{2} lu^{1}li^{1}; SM: be$^{2?}$e^{2} + lu^{1}li^{1} > be$^{2?}$e^{2} lu^{1}li^{1}).

Couplet 2-2, perturbed to higher:

1-1 + 2-2 > 1-2: žų¹tų¹ *carrying rope* + ñi²i² *leather* > žų¹tų¹ ñi¹i² *leather carrying rope* (SE: žo²žu¹tu¹ + ña²ə² > žo²žu¹tu¹ ña²ə²; SM: žo²žu¹tu² + ña²ə² > žo²žu¹tu² ña¹ə²). But: žu¹žu¹ *drop* + ntu²te² *water* > žu¹žu¹ ntu²te² *drop of water* (SE: žu¹žu¹ + ⁿdu²te² > žu¹žu¹ ⁿdu²te²; SM: žu¹žu¹ + ⁿdu²ča² > žu¹žu¹ ⁿdu¹ča²).

2-1 + 2-2 > 1-1: žu²ʔu¹ *mouth* + ʔi²či² *road* > žu²ʔu¹ ʔi¹či¹ *beside the road* (SE: žu²ʔu² + ʔi²či² > žu²ʔu² ʔi²⁻¹či²; SM: žu²ʔu² + ʔi²či² > žu²ʔi¹či²).

3-1 + 2-2 > 1-1: sa³ʔa¹ *do* + ti²ñu² *work* > sa³ti¹ñu¹ *to work* (SE: sa¹ʔa² + Ni²ñu² > sa¹Ni²ñu²; SM: sa¹ʔa² + ti²ñu² > sa¹ti²ñu²).

2-2 + 2-2 > 1-1: ʔi²ñu² *thorn* + ža²bi² *maguey* > ʔi²ñu² ža¹bi¹ *maguey thorn* (SE: ʔi²ñu² + ža²bu² > ʔi²ñu² ža²⁻¹bu²; SM: ʔi²ñu² + ža²u² > ʔi²ñu² ža¹u²). But: sa²ʔma² *cloth* + pin²tu² *many-colored* (Span. pintojo *mottled*) > sa²ʔma² pin¹tu² *many-colored cloth* (SE: sa²ʔma² + pi²ⁿdu² > sa²ʔma² pi¹ⁿdu¹; SM: sa²ʔma² + pi²ⁿdu² > sa²ʔma² pi¹ⁿdu²); sa²ʔma² + ža²a² *white* > sa²ʔma² ža²a² *white cloth* (SE: sa²ʔma² + ža²a² > sa²ʔma² ža²⁻¹a²; SM: sa²ʔma² + ža¹a² > sa²ʔma² ža¹a²); etc.

In addition, there is one irregular perturbation of 2-2 > 1-2 after 2-3: ta²ta³ *offspring* + pin²tu² *many-colored* > ta²ta³ pin¹tu² *many-colored seed* (of corn or beans), (cf. sa²ʔma² pin¹tu² *many-colored cloth*, above), (SE: ta²ta² + pi²ⁿdu² > ta²ta² pi³ⁿdu¹; SM: ta²ta³ + pi²ⁿdu² > ta²ta³ pi¹ⁿdu¹); but ta²ta³ + ntu²či² *beans* > ta²ta³ ntu²či² *seed beans* (SE: ⁿdu²či² + ta²ta² > ⁿdu²či² ta²⁻¹ta²; SM: ta²ta³ + ⁿdu²či² > ta²ta³ ⁿdu²či²).

Couplet 2-3, perturbed to higher:

1-1 + 2-3 > 1-3: ža¹a¹ *tongue* + ñų²ʔų³ *fire* > ža¹a¹ ñų¹ʔų³ *flame* (SE: ža¹a¹ + ñų²ʔų⁴ > ža¹ñų²ʔų⁴; SM: ža¹a¹ + ñų²ʔų³ > ža¹a¹ ñų¹ʔų³).

2–1 + 2–3 > 1-3: žu²ʔu¹ *mouth, edge* + ñu²u³ *town* > žu²ʔu¹ ñu¹u³ *edge of town* (SE: žu²ʔu² + ñu²u² > žu²ʔu² ñu²⁻¹u⁴; SM: žu²ʔu² + ñu²u³ > žu²ʔu² ñu¹u³).

3-1 + 2-3 > 1-3: čį³ʔį¹ *skunk* + ʔi²ta³ *flower* > čį³ʔį¹ ʔi¹ta³ *a species of small skunk* (SE: čᵩ¹ʔᵩ³ + ko²syu² (?) > čᵩ¹ʔᵩ³ ko²syu²; SM: čį³ʔį¹ + pi²ⁿdu² *many-colored* > čį³ʔį¹ pi¹ⁿdu²).

2-2 + 2-3 > 1-3: nti²ki² *horn* + ʔi²su³ *deer* > nti²ki² ʔi¹su³ ~ ʔi²su³ *deer's horns* (SE: ⁿdə²kə² + ʔi²su² > ⁿdə²kə² ʔi²⁻¹su² ~ ʔi²su²; SM: ⁿdə²kə² + ʔi²su³ > ⁿdə²kə² ʔi²su¹). But: sa²ʔma² *cloth* + ʔį²tį³ *bag, pocket* > sa²ʔį¹tį¹ *tortilla bag* (SE: sa²ʔma² + žə²Nə² > sa²žə²⁻¹Nə²; SM: sa²ʔma² + hi²nu³ > sa²ʔma² hi²nu¹).

3-3 + 2-3 > 1-3: nu²u³ *to, at, where* + ñų²ʔų³ *fire* > nu²u³ ñų¹ʔų³ *to the fire* (SE: nu²u⁴ + ñų²ʔų⁴ > nu²u⁴ ñų³ʔų¹; SM: nu²u³ + ñų²ʔų³ > nu²u³ ñų¹ʔų³). But: there are a few sequences of 3-3 + 2-3 > 3-1: nu³ni³ *corn grains* + ta²ta³ *offspring* > nu³ni³ ta³ta¹ *seed corn* (SE: nu²ni⁴ + ta²ta² > nu²ni⁴ ta²⁻¹ta²; SM: nu²ni³ + ta²ta³ > nu²ni³ ta²ta¹). One 2-3 morpheme develops a unique tone glide: ši³ni³ *head* + ti²na³ *dog* > ši³ni³ ti¹⁻³na³ *dog's head* (SE: ši²ni⁴ + ʔi²na² > ši²ni⁴ ʔi²⁻¹na²; SM: ši²ni³ + ti²ʔi²na³ > ši²ni³ ti¹ʔi²na³). After some 3-3 couplets, the 2-3 couplets are optionally perturbed: he³ʔe³ *foot* + nči²bi³ *people* > he³ʔe³ nči¹bi³ ~ nči²bi³ *for the people, people's feet* (SE: he²ʔe⁴ + ña²žu²u² > he²ʔe⁴ ña¹žu²u²; SM: ha²ʔa³ + ña³žə²bə² > ha²ʔa³ ña¹žə²bə²); etc.

Couplet 3-3, perturbed to higher:

1-1 + 3-3 > 1-3: ši²¹ña¹ *hawk* + šę³ę³ *fierce* > ši²¹ña¹ šę¹ę³ *fierce hawk* (SE: ši²¹ña¹ + šę²ę⁴ > ši²¹ña¹ šę¹ę⁴; SM: šį¹ʔą³ + šą²ą³ > šį¹ʔą³ šą²ą³).

2-1 + 3-3 > 1-3: nta²ʔa¹ *arm* + mi²³nte³ *nopal cactus* > nta²ʔa¹ mi²¹nte³ *nopal cactus branch* (SE: ⁿda²ʔa² + bi²²ⁿde⁴ > ⁿda²ʔa² bi²¹ⁿde¹; SM: ⁿda²ʔa² + bi²²ⁿča³ > ⁿda²ʔa² bi²¹ⁿča³).

3-1 + 3-3 > 1-3: šų³ʔų¹ *bit* (*twelve and a half cents*) + ku³mi³ *four* > šų³ʔų¹ ku¹mi³ *fifty cent piece* (SE: šų⁴ʔų¹ + kų²ų⁴ > šų⁴ʔų² kų¹ų⁴; SM: šų³ʔų¹ + kų²ų³ > šų³ʔų¹ kų¹ų³).

2-2 + 3-3 > 1-3: ʔi²či² *road* + ža³ta³ *back* > ʔi²či² ča¹ta³ *behind* (SE: ʔi²či² + ža²ta⁴ > ʔi²či² ža¹ta¹; SM: ʔi²či² + ža²ta³ > ʔi²či² ža²ta¹). But: čų²ʔų² *put* + ta³či²

wind > čų^{3}ta^{1}či^{1} *put air into* (SE: čų^{2}ʔų^{2} + ta^{2}či^{4} > čų^{2}ta^{1}či^{1}; SM: čų^{2}ʔų^{2} + ta^{2}či^{3} > čų^{2}ta^{1}či^{1}); etc.

3-3 + 3-3 > 1-3: ha^{3}a^{3} *that* + kį^{3}ʔį^{3} *go* + -de^{3} *he* + be^{2}ʔe^{2} *house* > ha^{3}a^{3} kį^{1}ʔį^{3} -de^{3} be^{2}ʔe^{2} *that he go to the house* (SE: he^{2}e^{4} + kį^{2}ʔį^{4} + -de^{2} + be^{2}ʔe^{2} > he^{2}e^{4} kį^{3}ʔį^{1} -de^{2} be^{2}ʔe^{2}; SM: ha^{3} + kį^{2}ʔį^{3} + -de^{2} + be^{2}ʔe^{2} > ha^{3} kį^{1}ʔį^{3}-de^{2} be^{2}ʔe^{2}). But: ši^{3}ni^{3} *head* + žu^{3}u^{3} *rock* > ši^{3}ni^{3} žu^{3}u^{3} ~ žu^{1}u^{3} *top of the rock* (SE: ši^{2}ni^{4} + žu^{2}u^{4} > ši^{2}ni^{4} žu^{3}u^{1}; SM: ši^{2}ni^{3} + žu^{2}u^{3} > ši^{2}ni^{3} žu^{1}u^{3}); etc.

In addition, there is the following irregular perturbation of 3-3 > 3-1 after a few 3-2 and 3-3 couplets: ku^{3}ñu^{2} *meat* + hį^{3}tų^{3} *barbecue pit* > ku^{3}ñu^{2} hį^{3}tų^{1} *barbecued meat* (SE: ku^{4}ñu^{2} + ʔį^{2}Nų^{4} > ku^{4}ñu^{2} ʔį^{3}Nų^{1}; SM: ku^{3}ñu^{2} + hi^{2}nu^{3} > ku^{3}ñu^{2} hi^{3}nu^{1}); nu^{3}ni^{3} *corn grains* + te^{2}ʔ^{3}žu^{3} *rot* > nu^{3}ni^{3} te^{2}ʔ^{3}žu^{1} *rotten corn grains* (SE: nu^{2}ni^{4} + te^{2}ʔ^{2}žu^{4} > nu^{2}ni^{4} te^{2}ʔ^{3}žu^{1}; SM: nu^{2}ni^{3} + te^{2}ʔ^{2}žu^{3} > nu^{2}ni^{3} te^{2}ʔ^{3}žu^{1}); etc.

Couplet 3-1, perturbed to higher:

1-1 + 3-1 > 1-^{3}-1: ntu^{2}ku^{1}nu^{1} *board* + ži^{3}či^{1} *dry* > ntu^{2}ku^{1}nu^{1} ži$^{1-3}$či^{1} *dried boards* (SE: žu^{2}nu^{2} ku^{1}nu^{2} + ʔi^{2}či^{2} > žu^{2}nu^{2} ku^{1}nu^{2} ʔi$^{2-1}$či^{2}; SM: žu^{2}nu^{2} + ʔi^{1}či^{1} > žu^{2}nu^{2} ʔi^{1}či^{1}).

2-1 + 3-1 > 1-^{3}-1: žu^{2}ʔu^{1} *mouth* + ti^{3}ka^{1} *basket* > žu^{2}ʔu^{1} ti$^{1-3}$ka^{1} *rim of the basket* (SE: žu^{2}ʔu^{2} + hi^{4}ka^{2} > žu^{2}ʔu^{2} hi$^{2-1}$ka^{3}; SM: žu^{2}ʔu^{2} + hi^{3}ka^{2} > žu^{2}ʔu^{2} hi^{1}ka^{2}).

2-2 + 3-1 > 1-^{3}-1: žu^{2}ku^{2} *mountain* + ti^{3}či^{1} *avocado* > žu^{2}ku^{2} ti$^{1-3}$či^{1} *mountain where avocados are to be had* (SE: žu^{2}ku^{2} + ti^{4}či^{2} > žu^{2}ku^{2} ti$^{2-1}$či^{3}; SM: žu^{2}ku^{2} + ti^{3}či^{2} > žu^{2}ku^{2} ti^{1}či^{1}). But: ñą^{2}ʔą^{2} *woman* + su^{3}či^{1} child > ñą^{2}ʔą^{2} su^{1}či^{1} *young woman* (SE: ñą^{2}ʔą^{2} + su^{2}či^{1} > ñą^{2}ʔą^{2} su^{1}či^{1}; SM: ñą^{2}ʔą^{2} + su^{1}či^{1} > ñą^{2}ʔą^{2} su^{1}či^{1}).

2-3 + 3-1 > 1-^{3}-1: žu^{2}ku^{3} *herb* + nę^{3}ʔę^{1} *useless* > žu^{2}ku^{3} nę$^{1-3}$ʔę^{1} *useless herbs* (SE: žu^{2}ku^{4} + nę^{4}ʔę^{1} > žu^{2}ku^{4} nę$^{2-1}$ʔę^{3}; SM: žu^{2}ku^{3} + ñą^{3}ʔą^{1} > žu^{2}ku^{3} ñą^{3}ʔą^{1}).

3-3 + 3-1 > 1-^{3}-1: ko^{3}ʔo^{3} *bowl* + ži^{3}či^{1} *dry* > ko^{3}ʔo^{3} ži$^{1-3}$či^{1} *dry bowl* (SE: ko^{2}ʔo^{4} + ʔi^{2}či^{2} > ko^{2}ʔo^{4} ʔi$^{2-1}$či^{2}; SM: ko^{2}ʔo^{3} + ʔi^{1}či^{1} > ko^{2}ʔo^{3} ʔi^{3}či^{1}). But: ši^{3}ni^{3} *head* + čų^{3}ų^{1} *chicken* > ši^{3}ni^{3} čų$^{1-3}$ų^{1} ~ čų^{3}ų^{1} *chicken's head* (SE: ši^{2}ni^{4} + ^{n}du^{2}hi^{1} > ši^{2}ni^{4} ^{n}du^{2}hi^{1}; SM: ši^{2}ni^{3} + čų^{3}ų^{1} > ši^{2}ni^{3} čų^{1}ų^{1}); etc.

Couplet 3-2, perturbed to higher:

2-1 + 3-2 > 1-^{3}-2: žu^{2}ʔu^{1} *mouth* + mi^{3}ni^{2} *pond* > žu^{2}ʔu^{1} mi$^{1-3}$ni^{2} *edge of the pond* (SE: žu^{2}ʔu^{2} + mi^{4}ni^{2} > žu^{2}ʔu^{2} mi$^{2-1}$ni^{3}; SM: žu^{2}ʔu^{2} + mi^{3}ni^{2} > žu^{2}ʔu^{2} mi^{1}ni^{2}).

2-2 + 3-2 > 1-^{3}-2: bi^{2}ko^{2} *fiesta* + nti^{3}ži^{2} *deceased person* > bi^{2}ko^{2} nti$^{1-3}$ži^{2} *All Saints Day* (SE: bi^{2}ko^{2} + ^{n}də^{4}žə^{2} > bi^{2}ko^{2} ^{n}də$^{2-1}$žə^{3}; SM: bi^{2}ko^{2} + ^{n}də^{3}žə^{2} > bi^{2}ko^{2} ^{n}də^{1}žə^{2}).

3-2 + 3-2 > 1-^{3}-2: te^{3}e^{2} *man* + nį^{3}ʔį^{2} *strong* + ʔi^{2}ni^{3} *inside* > te^{3}e^{2} nį$^{1-3}$ʔį^{2} ʔi^{2}ni^{3} *stubborn man* (SE: te^{4}e^{2} + nį^{4}ʔį^{2} + ʔi^{2}ni^{2} > te^{4}e^{2} ni^{2}ʔ^{4}ni^{2}-ni^{3}; SM: ča^{3}a^{2} + nį^{3}ʔį^{2} + ʔi^{2}ni^{3} > ča^{3}a^{2} nį^{3}ʔį^{2} ʔi^{2}ni^{3}). But: ntu^{3}žu^{2} *nail* + ka^{3}a^{2} *metal* > ntu^{3}žu^{2} ka^{3}a^{2} *nail* (SE: ^{n}du^{4}žu^{2} + ka^{4}a^{2} > ^{n}du^{4}žu^{2} ka^{4}a^{2}; SM: ^{n}du^{3}žu^{2} + ka^{3}a^{2} > ^{n}du^{3}žu^{2} ka^{3}a^{2}).

3-3 + 3-2 > 1-^{3}-2: ha^{3}a^{3} *that thing* + ba^{3}ʔa^{2} *good* > ha^{3}a^{3} ba$^{1-3}$ʔa^{2} *the good* (SE: he^{2}e^{4} + ba^{4}ʔa^{2} > he^{2}e^{4} ba$^{2-1}$ʔa^{3}; SM: ha^{3} + ba^{3}ʔa^{2} > ha^{3} ba^{1}ʔa^{2}). But: he^{3}ʔe^{3} *foot* + te^{3}e^{2} *man* > he^{3}ʔe^{3} te^{3}e^{2} *the man's foot* (SE: he^{2}ʔe^{4} + te^{4}e^{2} > he^{2}ʔe^{4} te$^{2-1}$e^{3} ~ te^{4}e^{2}; SM: ha^{2}ʔa^{3} + ča^{3}a^{2} > ha^{2}ʔa^{3} ča^{3}a^{2}); etc.

Occasionally there is a sequence of three morphemes which contains two special sequences, i.e. morphemes 1 + 2, and morphemes 2 + 3 each comprise a special sequence. In this case, more often only the second special sequence is perturbed, though sometimes the first sequence is also perturbed:[10] ʔi^{2}ti^{2} *torch* + ñu^{2}ma^{3} *wax* + ba^{3}ʔa^{2} *good* > ʔi^{2}ti^{2} ñu^{2}ma^{3} ba$^{1-3}$ʔa^{2} ~ ʔi^{2}ti^{2} ñu^{1}ma^{1} ba$^{1-3}$ʔa^{2} *good wax candle*.

3. The first column of Table A shows the basic tone couplets of verbs in the potential aspect, from which other aspects may be predicted. Basic couplets 1-1, 1-2 and 1-3 are not shown on this Table, because in this dialect there are no verbs with a basic toneme 1 in the initial syllable, except a few which presumably were historically a com-

[10] This same phenomenon occurs in SE, though it is not described in my paper.

bination of s- causative + verb stem which has been perturbed to higher by this morpheme.[11] Therefore verbs with couplets 1-1, 1-2 and 1-3, all of which have initial clusters st-, sk-, sk^{w}-, and sy-, may be considered to be bi-morphemic and with initial syllable toneme 1 developed from basic toneme 2 or 3.

Mixtec verbs show three aspects: the potential, which is basic, since from these forms the other two aspects can be predicted; the continuative; and the completive. In my analysis of the SE dialect, I treated the continuative aspect of verb stems as also basic, since the differences between the continuative and the potential aspects are not caused by any immediately apparent morpheme, and since this approach was simplest for the SE dialect. For the SM dialect, Pike postulated that the raising of verb tone couplets in the continuative aspect is, like all other tone changes, the result of their position following a morpheme that causes this perturbation. This morpheme, apart from the tonal phenomena seen on the following morpheme, is zero in all three dialects. In SE we by-passed it completely by considering the tone couplets of the continuative aspect as basic. In SM Pike treated the continuative aspect as a regular perturbation phenomenon (plus a palatalizing influence in those verbs where the phonemes of the initial syllable are changed), since this perturbation, though preceded by a zero morpheme, coincided with all other perturbation phenomena for SM. For the ST dialect, I must return to Pike's postulation of a zero morpheme preceding the continuative aspect of verbs, in order to avoid the setting up of morphemes with basic tone glides in their initial syllable. This is undesirable both because it would add to the number of basic tone couplets, and because it would introduce glides as basic to a system which has only basic level tonemes in its other known dialects.[12]

TABLE A

Verbs

Potential (basic tonemes)	Occuring after continuative (zero), deliberative na^{1}, causative s-, are replaced by the following:	Occurring after complete ni^{1}^{3}, are replaced by the following:	Occuring after prohibitive ma^{1}^{3}, are replaced by the following:
2–1	1–1	3–^{2}–1	3–1
2–2	1–2	3–^{2}–2	3–1
2–3	1–3	3–^{2}–3	1–3
3–1	1–^{3}–1 or 1–1 (see text)	3–1	1–^{3}–1
3–2	1–^{3}–2 or 1–2 (see text)	3–2	1–^{3}–2
3–3	1–3	3–3	1–3

The second column of Table A shows the tone glides which are developed when verbs with initial toneme 3 are preceded by the postulated zero continuative aspect morpheme (and also by na^{1} deliberative and s- causative). This zero morpheme perhaps possessed a 1-1 tone couplet in this dialect, since 2-2 couplets following it > 1-2 in accordance with other special sequences of 1-1 + 2-2. The second column of Table A shows the same patterns of perturbation to higher as those listed in **2** for special sequences, except that those verbs with couplets 3-1 or 3-2 whose second syllable begins with glottal stop > 1-1 and 1-2 respectively and do not develop the 1-^{3} glide in the first syllable: ža^{1}ʔa^{2}-na^{2} *she is passing* (< ža^{3}ʔa^{2} *will pass*); but to^{1}-^{3}o^{2} ntu^{2}te^{2} *water is dripping* (< to^{3}o^{2} *will drip*).

There are several observations to be made

[11] One verb, however, is a combination of s-causative + nta^{2}^{1}bi^{1} *poor* > sta^{2}^{1}bi^{1} *to cheat, deceive, lie* (i.e. *to cause to become poor through deceit*). Four other verbs are presumably combinations of s- causative + stems whose meaning is not known: ste^{i}ę^{3} *teach, show*; stą^{1}ʔą^{3} *provoke, quarrel*; sk^{w}a^{1}ʔa^{2} *study*; su^{1}ʔa^{2} *make.*

[12] Two morphemes have been found, however, which do have these basic tone glides in this dialect: sk^{w}a^{1}-^{3}ñu^{2} *squirrel* may possibly be historically a combination of s- causative + k^{w}a^{3}ñu^{2}, the meaning of which is unknown, or it may have developed the glide by analogy with 3–2 couplets >1-^{3}-2 after s- causative. bi^{1}-^{3}či^{2} *fan* is the cognate of SE bi^{1}či^{3} and SM bi^{3}či^{2} and I have no explanation for the glide in this dialect.

regarding the completive aspect in the ST dialect. This is formed by the morpheme ⟨ni^{3}i^{3}⟩ preceding the verb. In SM, verbs are not affected tonally following this morpheme, but are tonally identical in the potential and completive. In SE the ni^{2}i^{4} completive is a type (c) morpheme, since verbs following it are perturbed to lower tonemes in accordance with type (c) action in that dialect. In ST, ⟨ni^{3}i^{3}⟩ exhibits several peculiarities. The third column of Table A shows perturbation of verb stems in patterns distinct from those listed for special sequences. In each case, when following ⟨ni^{3}i^{3}⟩, the basic tonemes of the stem remain, but stems with toneme 1 or 2 in the initial syllable develop a tone glide from 3 up to the basic initial syllable toneme (3-^{1} or 3-^{2}). Initial syllables with basic toneme 3 are not affected. Therefore, the developed couplets occurring on verbs following ⟨ni^{3}i^{3}⟩ may best be described as the result, not of regular perturbation, but of the fusion or extension of the tone of ⟨ni^{3}i^{3}⟩ onto the verb. Basic tonemes of verb stems remain the same, but the final toneme of ⟨ni^{3}i^{3}⟩ carries over to the initial syllable of the verb, resulting in a tone glide where that initial syllable carries a basic toneme higher than 3. These tone glides are exceedingly rapid and difficult to hear.

Furthermore, ⟨ni^{3}i^{3}⟩ seems to be disappearing, in common with the completely disappeared continuative aspect morpheme, for at least some of the verbs. The full disyllabic form ⟨ni^{3}i^{3}⟩ is heard only in very precise or hesitant speech, and we do not show it in the illustrations to follow; the abbreviated alternants ni^{3} and n-, the zero alternant, and the repeated alternant ni^{3} n- will be illustrated below. The process of disappearance perhaps began by the elimination of the vowel element, leaving the form n-. Possibly because some of the resultant consonant clusters were awkward, the n- was dropped in such clusters. At present the completive aspect of verbs is expressed always with the tone fusion described above, and often without any other trace of the completive morpheme.

There are just eight consonants and one consonant cluster[13] which occur initially in the completive aspect of verb stems in the ST dialect: n, nt, z, ž, h, t, č, k, k^{w}.

For verbs with initial n and nt in the potential aspect, the completive plus the verb is actualized as follows: ne^{2}nta^{2}-hį^{2} *the child will appear* > ni^{3} ne$^{3-2}$nta^{2}-hį^{2} ∼ ne$^{3-2}$nta^{2}-hį^{2} *the child appeared*; nti^{2}ko^{2}-ña^{2} *she will grind* > ni^{3} nti$^{3-2}$ko^{2}-ña^{2} ∼ nti$^{3-2}$ko^{2}-ña^{2} *she ground*.

For verbs with initial s, š, and h in the potential aspect, the completive plus the verb is actualized as follows: sa^{3}ʔa^{1}-ña^{2} *she will do* > nza^{3}ʔa^{1}-ña^{2} ∼ ni^{3}za^{3}ʔa^{1}-ña^{2} ∼ za^{3}ʔa^{1}-ña^{2} *she did*; ši^{3}ko^{1}-ña^{2} *she will sell* > nži^{3}ko^{1}-ña^{2} ∼ ni^{3}ži^{3}ko^{1}-ña^{2} ∼ ži^{3}ko^{1}-ña^{2} *she sold*; ka^{2}ta^{2}-są^{1} *I will sing*[14] > nhi$^{3-2}$ta^{2}-są^{1} ∼ ni^{3}hi$^{3-2}$ta^{2}-są^{1} ∼ hi$^{3-2}$ta^{2}-są^{1} *I sang*.

For verbs with initial t, č, k, k^{w}, and ž in the potential aspect, the completive plus the verb is actualized as follows: ta^{2}ba^{3}-de^{3} *he will take out* > nta$^{3-2}$ba^{3}-de^{3} ∼ ni^{3} nta$^{3-2}$-ba^{3}-de^{3} *he took out*; či^{2}so^{1}-de^{3} *he will add to* > nči$^{3-2}$so^{1}-de^{3} ∼ ni^{3} nči$^{3-2}$so^{1}-de^{3} *he added to*; ką^{3}ʔą^{3}-nu^{3} *you will speak* > nką^{3}ʔą^{3}-nu^{3} ∼ ni^{3} nką^{3}ʔą^{3}-nu^{3} *you spoke*; k^{w}i^{2}ta^{1}-nu^{1} *you will tire* > nk^{w}i$^{3-2}$ta^{1}-nu^{1} ∽ ni^{3} nk^{w}i$^{3-2}$ta^{1}-nu^{1} *you tired*; žu^{3}ʔu^{1}-ti^{3} *the animal will fear* > nču^{3}ʔu^{1}-ti^{3} ∼ ni^{3} nču^{3}ʔu^{1}-ti^{3} *the animal feared*.

Note in the last group the repetition of the completive morpheme (ni n-) in the second alternants. These alternants are perhaps those used in slower or more precise speech, and may very well be a development brought about by the reduction of the vowel in ni^{3} > n- and then a reinsertion of the original ni^{3}. Verbs in the last group, which do not occur in the completive without the bound

[13] See fn. 5 for the phonemes and allophones of this dialect.

[14] This verb is one of several classes whose initial consonants are k or k^{w} in the potential aspect, and which change to initial h or ž in the completive and continuative aspects.

n-, may conceivably at some later date keep the n plus initial verb consonant cluster after the free morpheme ⟨ni³i³⟩ has disappeared completely, thus setting up two classes of verbs on the basis of this dichotomy.

From the above it will be seen that clusters of n- + initial verb consonant or consonant cluster actualize as follows: n- + n or nt > n, nt, which may be considered as zero completive. n- + s, š or h > nz, nž, nh, or (more often) z, ž, h, with zero completive; for nz > z, an additional pheneme, z, has developed.[15] n- + t, č, k, k^{w} or ž > nt, nč, nk, nk^{w}, nč respectively.

In a sequence ⟨ni³i³⟩ completive + s- causative (following which verbs are perturbed to higher), + verb stem, the verb, though not contiguous to ⟨ni³i³⟩, is still affected: ka²ku² *will be born* > ska¹ku² *will give birth to* > ni³ ska³-¹ku² ~ ska³-¹ku² *gave birth to*; ka³ku² *will escape* > ska¹-³ku² *will rescue* > ni³ ska³-¹-³ku² ~ ska³-¹-³ku² *rescued*; there are few three-way glides as seen in the latter verb.

In a sequence of either of the two introductory nouns nu³u³ *to, where* or ha³a³ *that* + ⟨ni³i³⟩ completive + verb stem, the first syllable of ⟨ni³i³⟩ is perturbed to higher; it actualizes, however, as the raising to toneme 1 of the final syllable of the preceding morpheme (plus the regular fusion or extension of the toneme 3 onto the verb stem and the prefixing of n- to verb initial t, č, k, k^{w}, or ž, as in the last group listed above): ñu²u³ *town* + nu³u³ *where* + ni³i³ *completive* + ka²ku² *will be born* (>nka³-²ku² *was born*) + -są¹ I > ñu²u³ nu³u¹ nka³-²ku² -są¹ *the town where I was born*; čį³kį¹ *prickly pear* + ha³a³ *that* + sko¹žo² *cause to fall* (> sko³-¹žo² *caused to fall*) + ʔi²ñu² *thorn* + ku¹u² *is* > čį³kį¹ ha³a¹ sko³-¹žo² ʔi²ñu² ku¹u² *it is a dethorned prickly pear*.

The fourth column of Table A shows perturbation of verb stems following ma³a³ *prohibitive*. This sequence is the same as any other perturbation following a morpheme with final toneme 3 (2-1 and 2-2 verb couplets > 3-1, and other verb couplets are perturbed to higher). For combinations of ma³a³ + s- causative + verb stem, the verb stem is perturbed only by the s- causative (see the second column of Table A) and not by the non-contiguous ma³a³.

4. Pronoun enclitics are a highly specialized group in SM and SE because they have an intricate set of tonal rules distinct from other morphemes. In contrast to these two dialects, none of the ST pronouns cause perturbation, nor are they themselves perturbed, though three of them have two alternants[16] as seen below. Or otherwise stated, sequences of pronoun enclitic plus any other morpheme or of any morpheme plus pronoun enclitic, do not constitute special sequences as defined in this paper. We list below the pronouns in their enclitic and full forms for the sake of comparison with already published SE and SM lists;[17] the enclitic—

[15] See fn. 5.

[16] As in the other dialects, we treat pronoun enclitics separately, not attempting to equate these alternant forms with perturbation in special sequences, because they do not entirely fit into this type of perturbation, and because this would make it necessary to consider as a special sequence every sequence in the language with a pronoun enclitic as its second member.

[17] In SE, -o¹ ~ -o³ (SM -žo¹ ~ žo³; SE -žo¹ ~ -žo⁴) *we inclusive* has lost its initial ž. It affects preceding morphemes in the following ways: (1) In these morphemes the final vowel is lost: ti³ñu² *work* + -o¹ > ti³ñ-o¹ *our work*; ka²³bi³ *will read* + -o¹ > ka²³b-o¹ *we will read*. (2) For the remaining vowel of the preceding morpheme, u vowels are assimilated to o: ku¹²u³ *sick* + -o³ > ko¹²-o³ *we are sick*; žų¹tų¹ *carrying rope* + -o¹ > žǫ¹t-ǫ¹ *our carrying rope*. (3) Two other morphemes also harmonize their vowels before this enclitic: kį¹²į³ *go* + -o³ > kǫ¹²-ǫ² *let's go*!; ma²a¹ *demonstrative* + -o¹ > mo²-o¹ (the a > either [o] or may be more central, [ə]).

In addition to the eleven pronoun enclitics existent in SE and SM, two additional ones are listed for SE: -tu³ *wooden object* or *tree* would in SM and SE be designated as *thing*, -i³. In SE and SM *they* is expressed by means of a morpheme meaning *all* plus the pronoun enclitic. The enclitic -nta¹ *they* in ST seems to be a development from

subject and possessor—forms (with hyphens) precede the full—object—forms.

I (polite) → -są^{1}, → są^{3}ą^{1}.

You (polite) → -ni^{1}, → ni^{1}ʔi^{1}.

You (familiar) → -nu^{1} (after tonemes 1 & 2) ∼ -nu^{3} (after toneme 3), nto^{1}ʔo^{1}.

We (inclusive) → -o^{1} (after tonemes 1 & 2) ∼ -o^{3} (after toneme 3), → žo^{1}ʔo^{1}.

Child, thing → -hį^{2}, → su^{3}či^{1}.

Woman → -ña^{2}, → ñą^{2}ʔą^{2}.

I (familiar) → -ni^{3} (after tonemes 1 & 2) ∼ -ni^{2} (after toneme 3), ntu^{2}ʔu^{3}.

He → -de^{3}, → te^{3}e^{2}.

Animal, star → -ti^{3}, → ki^{2}ti^{2}.

Supernatural being, priest, rain → -ža^{3}, → ža^{3}a^{3}.

Wooden object, tree → -tu^{3}, → ñų^{2}tų^{2}.

Water → -de^{3}, → ntu^{2}te^{2}.

They → -nta^{1}, → nta^{3}ka^{1}.

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the morpheme nta^{3}ka^{1} *all, each*; in this dialect this form occurs both preceding a noun and following a verb: nta^{1} nči^{3}bi^{3} *all the people*; nką^{3}ʔą^{3} -nta^{1} *they said*.

Of the other pronoun enclitics, only two are identical in both phonemes and basic tonemes with SE and SM: -ña^{2} *she* and ni^{1} *you (polite)*. In ST, -ža^{3} *supernatural being, priest* is also used to designate *rain*.

5. There is the same type of non-phonemic lowering of tone in ST as described for SE, consisting of an optional drift toward phonetically lower tones as the sentence progresses. This lowering occurs usually following a toneme 3, after which following tonemes 1 or 2 may be actualized as [1 minus] and [2 minus] respectively. For 3-1 couplets, the toneme 1 is practically always lower than a preceding toneme 1. Thus in the phrase ʔi^{2}nka^{3} hi^{1}či^{1} sa^{3}ʔa^{1} −są^{1} *I will do it again*, the toneme 1 of sa^{3}ʔa^{1} is considerably lower than those of hi^{1}či^{1}; -są^{1} is then also lowered; when a toneme 1 actualizes as [1 minus], all succeeding 1 tonemes are likewise actualized on the same lowered pitch. In the phrase ʔi^{2}ku^{2} hi$^{3\text{-}2}$ʔi^{2} -ña^{2} ntu^{2}te^{2} *yesterday she drank water*, the end-point of the 3-^{2} glide in the initial syllable of hi$^{3\text{-}2}$ʔi^{2} may be actualized as [2 minus], and all of the succeeding 2 tonemes are lowered to the same phonetic pitch, so that the 2 tonemes of ʔi^{2}ku^{2} are considerably higher than those of the rest of the phrase. For 3-3 couplets, the second toneme 3 is always lower than the first.

NOTES AND REVIEWS

SIGN LANGUAGE ANALYSIS, ON ONE LEVEL OR TWO?

C. F. VOEGELIN

1. The Sign Language used by Australian aborigines would not be intelligible to users of the Sign Language which has its provenience in the Plains of North America; nor vice versa. The latter was not supplanted by English when that spoken language became a *lingua franca* among Plains Indians who represent, in their diverse languages, every one of the half dozen separate linguistic phyla set up by Sapir for North America (except Eskimo-Aleut). The development of dialect peculiarities in this Sign Language has continued after the European contact period, but all dialects known today are mutually intelligible. Masters of this Sign Language are no longer confronted by other unintelligible Sign Languages—if indeed, they ever were—though such exist; but beyond the contact range of users of Plains Sign Language. The Sign Language discussed in this Note is limited to one dialect of the Plains Sign Language and, further, to the idiolect or idiolects represented by William Shakespeare, an Arapaho Indian.

Though communication in the Sign Language is executed through bodily movements, these are restricted to the upper extremities (either to single or to paired hand-and-arm movements; when both hands-and-arms are used, one acts upon the other in successive sequence, or both are used simultaneously in identical-parallel or converging-intersecting movements). Despite this extreme restriction in bodily movement, the scope and size of the Sign Language lexical inventory is enormously greater than that of the relatively unrestricted bodily movement bee language discovered by Karl von Frisch. There would seem to be an inverse correlation between the greater number of possible bodily movements in the bee language and the fewer number of lexical items which have so far been revealed by experiments for eliciting in the bee language. In fact, John Lotz contends that this paucity in the lexical inventory makes communication by bodily movements of bees non-analogous to communication by spoken languages [and hence, likewise, non-analogous to human Sign Languages which, in addition, have to be learned—in teaching a Hopi child, our Arapaho informant held the child's hand and turned it to execute the sign for general question. And also, in addition, some non-neighboring Sign Languages would be unintelligible—as that of the American Plains and that of Australia—while bees brought from Australia would understand the bodily movements of bees hived in the Northern Plains of America.]

For the Sign Language, the scope and size of the lexical inventory is certainly much closer to that of a spoken language than it is to that of the bee language—but, still, approaching rather than equaling the magnitude of a spoken language dictionary. For one thing, the lack of neighboring unintelligible Sign Languages means that large scale borrowing of foreign signs is precluded.

Now, aside from the magnitude of its referent range, the Sign Language dictionary is really not comparable to any known spoken language dictionary. It is possible, however, to imagine a spoken language which would give the comparability not actually found: a spoken language made up largely of onomatopoeic morphemes. Upon hearing this unknown imaginary language for the first time—with its barking, booming and thumping sounds—one might be tempted to decode right off: to say that dogs and horses were running away because it was thundering; or were running toward game while hunters were shooting. Since spoken languages, as we know them, include a negligible fraction of onomatopoeic mor-

phemes, we have no clues to go by upon first hearing an unknown language, unless we analogize something about its contour spans to some association we have about the production of contour spans in our own language, and say the speaker of Navaho seems to be querying or the speaker of Arapaho seems to be querulous, or the like; but this kind of overall impression is not really a guess at decoding.

We can now predict what will happen when people watch LaMont West projecting movies of Northern Plains Indians in conversation, or executing long narratives (or when people watch our Arapaho informant executing short utterances in Sign Language): most casual observers cannot resist making a guess or two at decoding. But the same observers never attempt to decode spoken Arapaho when they hear it played back from a tape recorder.

The preponderant part of all the literature on the Sign Language is concerned with its lexical resources, either on the false analogy of its dictionary and the dictionary of a spoken language or else—conversely—to show precisely the non-analogous nature of Sign Language. The genius of the Sign Language as a unique system has been approached, so far, without benefit of initial grammar, of a preliminary ordering of regularities. That the literature does, in fact, center on the compilation of the dictionary as I assert it does, is demonstrated—and justified—by A. L. Kroeber, in this issue of IJAL (1-19).

All publications to date, including Kroeber's and J. P. Harrington's (in several successive issues of INDIANS AT WORK, twenty years ago), have been concerned with the size and scope of this dictionary. Though not wanting to stop with a mere lexical compilation of the Sign Language, the independent views of both Kroeber and Harrington seem to suggest that one cannot go very far beyond this—farther perhaps in making classifications and subclassifications of Sign Language lexical materials (as the class of pantomimic or gestalten or outline signs —by far the largest class; or as the class of pointing-to signs, or of wholly arbitrary signs) than in sorting out arrangements of combinatorial possibilities (as 'compounds' or 'noun phrases' in which the order might be either 'adjective—noun' or 'noun—adjective'). Kroeber (*op. cit.* p. 1) takes the lexical unit or morpheme to be the minimum component in the analysis of Sign Language: "The reason it has no equivalent to phonemes is that it begins to operate only on the level of morphemes, and so far as possible semantically substantive morphemes—many relational ones would be hard to devise gestures for." There can be no question of the adequacy of Kroeber's minimum component, so far as lexical inquiry is concerned; or even as concerns a modest grammar—*a grammar which is, strictly speaking, an appendix of the dictionary.*

2. A spoken language is susceptible to phonemic as well as morphemic analysis. If the minimum component of the Sign Language is on the morphemic level, then we have still another dimension in which Sign Language is non-analogous to a spoken language. We return to this question presently (**4** and **5**, below), but first state some of the contrasts which exist and the consequence which follows, in the analysis of a spoken language, from its susceptibility to dual level analysis. If the Sign Language should turn out to be susceptible to dual level analysis, then the same consequence should follow when it is analyzed (*the dictionary functioning as an appendix of the grammar*). If the Sign Language should turn out to be susceptible solely to morphemic analysis, the consequence would probably be that already noted under **1** (*the grammar functioning as an appendix of the dictionary*).

On the first of the two levels of analysis, we set up the phonemes which, for any particular spoken language, are (1) not only finite in number but low in number, hence constituting something like a closed corpus;

(2) are free of referent value or grammatical meaning; (3) are combinable in certain sequences entirely in terms of their own level for each particular language, as the freedom of /ŋ/ before and after vowels or consonants (in Hopi), or as the restriction of /ŋ/ to syllabic final (in English); (4) are combinable in certain sequences in regular interdependence with the second level morphemic units, as in Shawnee where words begin only in consonants and end only in vowels; (5) are combinable in very many sequences in irregular interdependence with second level units, as where the phonemes appear in sequence as the basic—and arbitrary—constituents of morphemes. The first four of these features surely belong to the grammar; perhaps the fifth belongs to the dictionary: "The linguistic student should never make the mistake of identifying a language with its dictionary . . . the mere content of language . . ." (Edward Sapir, *Language*, 234, N.Y., 1921).

On the second of the two levels of analysis, we set up morphemes which (1) are infinite, in the sense of being uncountable, since native speakers may borrow unrestricted numbers of non-native morphemes from other spoken languages which, in combinatorial usage and in phonemic shape, may become indistinguishable from native morphemes (as Hopi /móro/ from Spanish *burro*; /móro/ combines with native Hopi morphemes like /pó:ko/ *dog*); (2) have referent value or meaning in the usual lexical sense, and serve as meaning loci for grammatical regularities in a complex and often redundant manner; (3, 4) are never combinable solely as second level units, since (5) they are constituted out of first level units (the phonemes).

In the immediately preceding paragraphs, three contrasts appear between the two levels (phonemes *vs.* morphemes): (1) finite *vs.* infinite in inventory; (2) semantically free *vs.* semantically involved; (3) combinable without reference to other level *vs.* combinable only with reference to other level. Points (4) and (5) are as applicable to one level as they are, conversely, to the other. The contrast numbered (2) may possibly be avoided—morphemes, too, may be liberated from semantic involvement, and yet remain identifiable for purposes of formal analysis, as Zellig Harris has shown in a small sample.

What is emerging, in combinatorial linguistics, is a de-emphasis of contrasts between phonemes and morphemes, and an increasing awareness of interdependence between the two levels. For example, morphemes are often treated as quasi-independent second level units, formalized by letters, or index numbers, or both (without direct reference to their linear phonemic shape) in analysis which, however, cannot progress far without reference to non-linear phonemes. In a given language such quasi-independent morphemes are shown to be combinable in successively longer sequences; but these sequences on the second level (contour spans) have their natural boundaries marked by non-linear phonemes (for intonations, junctures, close and open transitions) from the first level. After establishing the fact that morphemes are phonemically constituted, linguists analyze second level sequences *as though* independent of first level phonemes; but when analysis is carried far enough, interdependence between the two levels is again reestablished (through contour span phonemes).

Whenever an irregularity is found on the first level, it is labelled 'asymmetrical' but still remains part of the phonemic analysis; preliminary analysis of what appears to be asymmetrical, may be restated more than once so that a given phonemic system turns out to be increasingly symmetrical with each restatement. On the other hand, though morphemic restatements are possible, irregularities found on the second level, being amazingly numerous, are for the most part not kept for symmetricizing restatement; instead, they are thrown into the dictionary: "*The lexicon is really an appendix*

of the grammar, a list of basic irregularities." (Leonard Bloomfield, Language, 274, N.Y., 1933).

3. In the choreographic approach, one makes a notation for Sign Language as though it were a dance restricted to hand-and-arm movements. Relatively detailed description is obtained by the Laban notation, for example, in contrast to a more selected and crucial point description (as where motion initiates, or turns, or ends) by Gertrude Kurath's notation for American Indian dances.

In LaMont West's tentative application of the general choreographic principle to sign language, an area in which hand-and-arm motions occur—as between the shoulder and the hip—was treated as a ruler having a fixed number of relative units, roughly comparable to inches; the position of the hand could then be identified in respect to the constructed choreographic ruler. The sum of the notational units would necessarily run high—into the hundreds. These units could then be reduced somewhat by combining detailed units which turned out to be non-distinctive—non-distinctive from the point of view of the obvious crucial point in Sign Language, which we may term the morpheme translatable by a simple gloss (e.g., for WOLF, as opposed to a compound for COYOTE, which includes WOLF as one of its members). The reduction obtainable by grouping together what amounts to free variants depends on the detail included in the initial unreduced notation; the final or reduced notation is at best comparable in magnitude to a syllabary rather than to a phonemic alphabet for a spoken language.

The crucial points in the choreography of the dance are of a different order than those useable in devising a notation for the Sign Language. The dance is not without translatable information—much more so for some dances than for the kind of music to which program notes are appended. But notation for music with program notes is the same as notation for abstract or non-program music; so also dance notation is for all movements, including—but not specifically for—movements which may be more informative or symbolic than abstract and non-informative. Notation for the Sign Language, on the other hand, is relevant for movements which convey information; other movements are extra-systemic or irrelevant. (Cp. notation for a spoken language which omits recording a sneeze or a cough as being extra-systemic, extra-linguistic.) If the Sign Language is a code, it should be encodable in notation, and decodable from notation—with reference, at least, to the simple gloss and the compound as identified above; and possibly with reference to some analogue of minor morphemes, such as affixes in spoken languages.

4. The letters traditionally used in phonetics come to us by historical accident, and not by systematic planning. It will get us nowhere to examine the loop on the top and bottom (both on the right side) of [p] and [b], or the loop on the bottom (left side) of [d]. But the more we substitute numbers for letters, the more clearly can we represent systematic interrelations.

It's possible to number successive consonant positions from front to back for whatever KINDS of consonants—as S = stops and affricates, SV = semivowels, F = fricatives, N = nasals—are involved in a given system, as Arapaho, with labial position numbered 1 for S and SV = /p w/; 2 for dental-alveolar S, F and N = /t θ n/; 3 for alveolar-palatal S, F, and SV = /c s y/; 5 and 6, respectively, for velar and pharyngeal S and F = /k x, ʔ h/. Or the numbers indexing front to back POSITION can be written as superscripts of the letters for KINDS of consonants: S^1, SV^1 = /p w/; S^2, F^2, N^2 = /t θ n/; S^3, F^3, SV^3 = /c s y/; S^5, F^5 = /k x/; S^6, F^6 = /ʔ h/. Or the letters may be replaced by basic (as opposed to superscript) numbers—S by 1, F by 2, SV by 3, and N by 4—and combined with the superscript numbers, as above, to show

the interrelationship of POSITION and KIND of consonant. One can let the basic number 0 stand for any KIND of consonant and say the maximum POSITION distinctions for 0 in Arapaho are 0^1, 0^2, 0^3, 0^5, 0^6, which happens to be the same as for stops, $1^1\ 1^2\ 1^3\ 1^5\ 1^6$ = /p t c k ʔ/; and are more than for fricatives, $2^2\ 2^3\ 2^5\ 2^6$ = /θ s x h/; and more than for semivowels, $3^1\ 3^3$ = /w y/; and more than for the nasal, one KIND of consonant in one productional POSITION, 4^2 = /n/.

Analogues like the choreographic ruler (**3**, above), or comprehensive lists of PHONES[1] have turned out to be not sufficiently reducible or too slowly reducible for purposes of devising an economic notation for the Sign Language. However, by beginning with something like the Sign Language analogue of PHONETIC TYPES,[2] and by using as a notational model that given above for representing Arapaho consonants by basic numbers and superscript numbers, it seems possible to transcribe the Sign Language in an orthography whose sum of distinctive units will not greatly exceed the number of such units in a phoneme inventory expectable for a spoken language. For example, as set up by LaMont West, eight or nine basic numbers are enough to represent KINDS of hand-and-arm executions. These KINDS can then be actualized in one or another POSITION or DIRECTION as represented by superscript numbers of which eight are highly recurrent. If 0 stands for any KIND of hand-and-arm execution, then 0^1 distinguishes movement *to the right*, from 0^2 *up*, from 0^3 *to the left*, from 0^4 *down*, from 0^5 *away from body*, from 0^6 *toward body*, from 0^7 movement *toward referent*, from 0^8 movement *toward other hand*. Unless otherwise indicated all this is executed by the right hand-and-arm; parentheses and brackets surround basic numbers and superfix numbers which indicate execution by paired hands-and-arms, simultaneously; and order of sequence within parentheses shows when one hand is acting on the other.

The resulting notation for Sign Language promises to provide a phonemic-like inventory of components which are (1) low in number and precisely countable, (2) free of semantic involvement, (3, 4) combinable with regularity on the semantically free level, and also—in very many sequences—in regular interdependence with components of the semantically involved level, and (5) are combinable in some sequences as wholly arbitrary constituents of semantically involved components.

5. A final and not easy to answer question: what advantage does a two level analysis have over a one level analysis, either for a spoken language or for the Sign Language? The difficulty in expositing an exemplified answer to this question lies in the fact that all analyses of spoken languages are, as a matter of fact, two level. Conversely, all inquiry into the Sign Language has proceeded, so far, without being benefited (or burdened) by a two-level analysis.

For the sake of exposition, we will suspend two level analysis, in one example of a spoken language (Hopi), and describe sounds of the remaining minimum component, the morpheme, in simple English terms; and, in order to show combinations among morphemes, we will let the translation glosses (written in caps) stand for the morphemes. In expositing the Sign Language example, we will begin with a morpheme example from

[1] Though generally referring to sounds as transcribed (before they are grouped together as allophones of particular phonemes), 'phones' are here, in addition, defined as the closest possible transcription—a record of everything that the ear can hear, supplemented (where possible) by acoustic analysis.

[2] A general or 'phonetic type' of sound—not to be confused with phonemic typology, nor with 'phones' (fn. 1)—may be used in a transcription unconcerned with phonetic minutiae, a transcription which focuses attention on the fewest possible common or shared features: stop-ness, fricative-ness, nasal-ness is produced in the dental-alveolar area in Arapaho /tθn/; only the first two KINDS of consonants—stops and fricatives—are produced in velar and pharyngeal areas: /kx/ and /ʔh/.

Tomkins and compare the results of a single level analysis to the results which might be obtained in a two level analysis.

The spoken language example is a 'dependent' sound sequence made in Hopi by suddenly closing the glottis, followed by a vowel-like sound but with the tongue blade slightly touching the front top of the palate as though it were a consonant, followed by a stoppage of air with tongue tip held tightly at alveolar ridge, followed by a vowel made with the tongue as low as it ever gets in Hopi. This 'dependent' sound sequence is called a suffix because it occurs only after other sequences, and never independently. Its most common translation gloss is POSSESS. Thus, TOBACCO-POSSESS is used in such sentences as *do you* TOBACCO-POSSESS, in the sense of *do you have a cigarette*? So also, SHIRT-POSSESS may be used in such sentences as *he is wearing a shirt*. This is about as far as a one level analysis would go.

In two level analysis, the representation of the suffix in question, -ʔyta, is briefer, and is subject to further morphemic analysis. This suffix would be discovered, when represented phonemically, in sequences where it would not be discovered in one level analysis, as tí·mó-ʔyta *actor* EATS, since tí·mó- by itself could have the very same gloss value, *singular* EATS (with the gloss value of -ʔyta not apparent here), in contrast to a suppletive plural nó:nová *actors* EAT. On its single morphemic level, the representation by gloss would again mask word included morphemes in the presentation of nouns, as wí:ti *woman*, momóyam *women*; the latter includes not only a suppletive plural stem, (momoya-) but also a plural suffix (-m).

The Sign Language example from Tomkins is "SEE. Bring right 2 hand [= index and middle fingers, forked] to opposite eyes, and the two fingers should point in the direction one is looking." This simple English description is accompanied by an outline drawing of eye, nose, and hand (in position described verbally), with the label in French, German, and English: Voir, Sehen, See. Three sentences illustrated by outline sketches and accompanied by word glosses, and free translations, are given by Tomkins; all three sentences include the same sign outline and the same gloss for SEE: "LONG TIME–SEE–NOT = *I have not seen you for a long time.* QUESTION INDIAN I SEE YOU WITH DAY NOW = *Who was that Indian I saw you with today.* I–SEE–DEER; BEAR; WOLF = *I see deer, bear, wolf.*"

Systematic shared-morpheme eliciting, however, shows that more than one sign for SEE can be executed in combination with signs for other glosses to produce the following general sentence types: (1) SPEAKER SEES RESPONDENT, and (2) RESPONDENT SEES SPEAKER, and (3) NON-SPEAKER SEES NON-RESPONDENT.

In the one level representation, the direct glosses make clear who is actor and who is goal: (1) SPEAKER as actor, (2) RESPONDENT as actor, (3) actor and goal other than speaker or respondent.

In the two level representation, however, the three relationships are again (redundantly) included in the word for SEE—by means of three different directional indicators which are 'dependent', and hence affixes, combining with the morpheme for SEE. According to this analysis, SEE plus affix means *sees toward body* (as in general type sentence 2, above). And so on for the other sentences, with other affixes combining with SEE.

We conclude that the actor-goal relationships are twice-marked—once by the signs for actors and goals, and secondly, or redundantly, by affixal or dependent signs included with the sign for SEE. The included or affixal signs are either masked and difficult to find—or else difficult to state—in one level analysis; but they are clearly

apparent and easy to state in two level analysis.[3]

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COMPOUNDS AND COMPARISON

DOUGLAS TAYLOR

In her recent exposition: The ABC's of lexicostatistics (in Word 12.175ff.), Sarah C. Gudschinsky discusses, inter alia, the necessity of isolating equivalent morphs when comparing compound or complex words: "If members of a pair of words are compounds, one pair of the constituent morphemes may be cognate even though the words as a whole are not cognate"; and as an example she cites the Ixcatec and Mazatec words for *guts*, composed respectively of morphs meaning *skin* + *dung* and *rope* + *dung*, whose second members only are cognate. On the other hand, one of the same morphs, Ixcatec ña²—*skin*, is eliminated as irrelevant from her comparison of these languages' words for *ear*—presumably because the Mazatec form is simple. Also eliminated from comparison in the search for lexical cognates are: nominalizers, markers of class, person, number, aspect, etc., and "initial verbal items of vague general meaning." All of this requires, as Miss Gudschinsky says, "some knowledge of the morphology of the languages studied"; and such knowledge is all too often wanting when Amerindian languages are compared. But even when this is not the case, it may be hard to decide just what to retain when comparing a complex with a simple form, or either with a compound; for it often happens that one member of a compound becomes bound, and that an affix and stem coalesce to produce a new morpheme. Thus, if the morphology but not the history of modern standard Spanish and of classical Latin were known, it might be better to compare Sp. comer (or como) with Lat. comedere (or comedo) than to eliminate the affixes and compare Sp. com- with Lat. ed-. In what follows I shall cite and discuss some problems of this kind that are encountered in comparing equivalent forms from different Arawakan languages.

Most of the words that I have found recorded for the body part *head* appear to be or to have been compounds containing a morph cognate with Lokono (True Arawak) iwi *fruit* (but more often meaning *flower* in other modern languages).[1] So Carutana hiwida, Tariana awida, Piapoco iwita, Siuci wita, Adzaneni, Catapolitani, Ipeca and Mandauaca wida, all meaning *head*, appear to contain ida or ita *bark or bark canoe* of the same languages in composition with iwi, whose present meaning in Carutana, Catapolitani, Mandauaca, Siuci and Tariana is *flower*, but which probably means or meant *fruit* in Piapoco and Adzaneni, whose respective words for *flower* are iwina and eliwi (cf. Island Carib ſlewe *flower*, Taino -el and Ariti ili *child*). These words for *head* seem to be cognate also with Piro hiweɬa and Cujisenajeri siwesa *hair*, and with Taino hiwera, Island Carib wira and Lokono iwida, meaning *calabash* (*Crescentia cujete*), the last of

[3] Grateful acknowledgments are made (1) to The American Philosophical Society for research funds; (2) to Indiana University for research funds; (3) to The Museum of Northern Arizona for providing research facilities; (4) to A. L. Kroeber for initiating the Sign Language project and stimulating us in correspondence and in conference; (5) to all the members of the Field Station Seminar, and in particular William Shakespeare, LaMont West, Florence M. Voegelin and John Yegerlehner.

[1] Only broadly phonetic transcriptions are available for most of the languages cited. Here I adopt the following conventions: ɬ = [ts], c = [tš], long vowels are shown as geminated (VV), w = syllable-initial [u̯] or [ü̯]—even when, as in Lokono and in Island Carib, it is phonologically /u/. The Island Carib back unrounded vowel (which I usually write /o/) is here shown as ë. For the early Dominican dialect of this language, k and g are given as in the source (Raymond Breton's dictionary); but if it had a k/g opposition, aspiration of k and not voicing of g was the distinctive feature, so that phonological g may often be shown as k (v. Word 11, pp. 245ff.).

which is readily analysable as iwi *fruit* + -da ~ eda- *skin, bark or other covering*.

So far so good; but other Arawakan words for *head* that appear to contain a morph cognate with Lokono iwi *fruit* are less transparent. They include Goajiro ekiwi ~ -ikii, Ipurina ikiwi, Shebayo -kewiri, Maipure kivuku (cf. ivi *flower*), Custenau tewi, Mehinacu teu, Palicur teuti, Mojo cuti, Guinao incewe, Ariti (Paressi) -siwili (cf. -siwi *hair*, iwi *flower*, ali *fruit*), Yucana wile, Ipurina siui (as well as ikiwi), Cujisenajeri siwe (cf. Yavitero siwi *nose*, which probably contains the stem of sihu *head*, whose -hu appears to be a suffix, and Goajiro *(e)siwi > -sii *flower*), Piro hiwe and Saraveca heve. Now Lokono isi *head* also means *top, tip* and—unless it be a homonym—*seed*, combines with iwi *fruit* to form the compound iwisi *testicle*, and is contained in isiri *nose*, isin *penis* and other words. Apparently cognate with it are: Carutana and Siuci iši, Baure ese, Saraveca ehe, Goajiro -si and Ariti asi, all meaning *seed*; while a bound morpheme cognate with it enters into Island Carib ísik ~ isḗkë *head* (cf. ḗkë *core, nucleus*), isíuna *neck* (cf. íuna *stem, base, tube*), ísiri *nose* and other words. It is therefore tempting to see in such forms as siwi, siwe, hiwe and heve (v. above) one-time compounds containing cognates of Lokono isi and iwi. But if Piro hiweɬa and Cujisenajeri siwesa *hair* contain a morpheme not found in Piapoco iwita *head*, should they be considered as cognate with the latter? Moreover, such compounds may have arisen more than once, at different times and places with the same or with different designations; and surely it would be wrong to regard as cognates words containing cognate morphemes in reverse order, as appears to be the case of Yavitero siwi *nose* and Lokono iwisi *testicle*. (Cf. Eng. hūswīf > *hussy* and *modern housewife*).

Also the first members of those compounds meaning *head* which contain k, t or c might be regarded as cognates of Lokono isi; for we find other such apparent correspondences of this nature as in: Goajiro maiki, but Lokono and Island Carib marisi, meaning *maize*; Maipure kipa and Wapisiana keba, but Mehinacu tepa, Palicur tipa and Bare tiba, Taino ɬiba, Guinao šiba, Lokono and Yavitero siba, Ariti si(h)ali, Adzaneni hipada, Catapolitani hipade, Piapoco hiba, Tariana hipata, all meaning *stone*; Wapisiana kibi, Bare tipi-, Island Carib sipi and Lokono sipe > sife, meaning *bitter*.

However, the seeming lack of regularity is disconcerting: Goajiro has ihpah *stone* and sikih *fire*, the latter corresponding to Palicur tiketi and Lokono hikihi (an older recording has hiket) with the same meaning; Island Carib árisi *trace, after* corresponds to Lokono adiki (the r : d correspondence is regular) and to Goajiro aciki *after*, but Goajiro -ceʔe *ear* corresponds to Lokono -diki and to Island Carib aríkai with the same meaning. If Island Carib ísik ~ isḗkë *head* contains a morpheme cognate with Lokono isi *head*, érikë of the former (as also Goajiro iʔiruku) and isiroko of the latter language, meaning *flesh*, cannot be cognate unless Lokono isi *head* and isi- of the word for *flesh* belong to different morphemes; nor can isi- and -ëkë of the first Island Carib word belong to the same morpheme. Cf. also (Island Carib : Lokono) asíka : atika *to dig*, but áti : ati *Capsicum* and ítika : itika *excrement*. But there is more; if we compare the Island Carib dialect we have been using (Dominica circa 1650) with that of Central America circa 1950, we find such correspondences as: lisíkusi : lisíguse *his eyebrows* and sísira : sísira (*shaman's*) *rattles*, but ísiga : íciga *to give* and asíka : acíga *to dig*, ísiri : ígiri *nose* and árisi : árigi *after*. Ipurina apparently has both ikiwi and siui meaning *head*; and if I am right in regarding Goajiro -sii *flower* as a contraction of *(e)siwi, this shows something like a minimal opposition with -ikii ~ ekiwi *head*.

Nevertheless, well attested correspondences between various languages of this family are so diverse that it would be unrealistic to set up a different phoneme of the proto-language for every one of them. Island

Carib ékë ~ ek- *core or nucleus*, (-)iti(-) and (-)isi(-) were and are most certainly different morphemes of that language, but they may well go back to a common proto-form which was split as a result of inter-dialectal borrowing and semantic differentiation (v. IJAL 23, p. 22); and I assume the same to be true of similarly divergent forms cited from other Arawakan languages.

As is to be expected, the comparison of more than two languages may be required in order to reveal cognation between two given forms. Despite a certain resemblance, there is no justification for regarding Lokono -wasini or -wasina and Island Carib anísi, meaning *heart*, as cognates until they are placed in such a set as: wasini : wahi : ivihine : anisi : aï (< ani) : inišini : nikini (Lokono : Piro : Saraveca : Island Carib : Goajiro : Guinao : Maipure), all meaning *heart*, when, given certain correspondences attested elsewhere, the relationship becomes clear. Even so, such a reconstructed form as *iwaniki(ni) gives no clue as to original morpheme division except to suggest that final -ni is or was a suffix. Similarly, in the absence of cogent evidence from other languages, Goajiro atiha : Lokono adita > aita (both attested; cf. Island Carib aríta *think*) *know* must be considered as not cognate, since we usually find as between these languages: /ci/ : /di/ and /sa/ : /ta/, /ta/ : /da/ and /ši/ : /ti/.

On the other hand, what is a simple or at most a complex form in one language may appear as a compound in another of the same family—and that whether the former be a cognate or a loan. So Lokono ire- *child* + -ti *father* > ireti *husband* is represented in Island Carib by iráiti and in Goajiro by eeci (probably < *eerdi, which would explain the irregular correspondence), both meaning *husband*; the words for *child* in the latter languages being, respectively: iráhë ~ -iráë and -caũ ~ -cõ, and those for *father*: -ukusi- and -ših. Island Carib iúma *mouth* + áru *edge or border* > iúmaru *lip*; but Goajiro -iimat *lip* contains no smaller meaningful unit of that language. Island Carib ítiuma *moustache or beard* contains the word for *mouth* together with a bound morpheme found also in ítiburi *hair* (in which -buri is a kind of pluralizer or collectivizer); but Lokono itima *moustache or beard* must today be regarded as a simple form—despite the subsistence of ema ~ uima *mouth of a river*. Island Carib áriuma *bottom*, *chin* and áriuna *navel* apparently contain, respectively: iúma *mouth* (cf. ítiuma *beard*) and íuna *stem* (cf. isíuna *neck* and—containing ugúti *foot*—ugutíuna *heel*). The latter compound—or what Breton gives as its synonym, áriruku, containing -ruku *interior*—has been reduced, in the modern Central American dialect, to ári *navel*, a homonym of the word for *tooth*. This might lead to confusion were it not for the knowledge of such a form as Lokono adi *over*, *upon*, *more than*, *following*, and of the r : r and r : d correspondences seen in (Island Carib : Lokono) ári : ari *tooth*, but árisi : adiki *after* (cf. L adikihi *track*, *footprints*, and compare L aditi > aiti *son* with L ireti *husband* as analysed above). But knowing this, we may with some confidence analyse: áriuna as ári *after* + íuna *stem*, áriuma as ári *after* + iúma *mouth* (cf. Lokono enako *behind* + -leroko *mouth* > enakoleroko *anus*), and regard as prefixed (not improbably: t- *her* and m- *without*) the initial phonemes of Taino tarima and marima, both glossed as nalgas *buttocks*.

A generous selection of Arawakan vocabularies, as well as a number of grammatical descriptions, must be made available before the relationships between members of this family can be studied and an attempt at reconstructing the proto-language made.

DOMINICA, BRITISH WEST INDIES

BIBLIOGRAPHIE DES LANGUES AYMARÁ ET KIČUA. By Paul Rivet and Georges de Créqui-Montfort. Paris: Travaux et Mémoires de l'Institut d'Ethnologie 51. Vol. II (1876–1915), 1952, pp. 656; Vol. III (1916–1940), 1953, pp. 783; Vol. IV (1941–1955), 1956, pp. 957.

THOMAS A. SEBEOK

The first of these four imposing volumes—reviewed in IJAL 19.159-60 (1953)—encompassed, within something over five hundred pages, the production of a little more than three and a quarter centuries. The second volume, requiring over thirty per cent more space than its predecessor, codified the outpour of the next forty years. The third spanned but a quarter of a century, yet required half again as many pages as the thirteen times longer period covered in the first. The last volume is approximately twice the size of the first, and it is a striking measure of the ever accelerating accumulation of Aymara and Quechua items that this represents the labor of only fifteen years—in comparison with the total output between the Spanish Conquest and 1875.

The immediate aim of this bibliography—the research for which began fifty years ago—was nothing less than to provide an exhaustive listing of all documents relating to the Aymara and Quechua, and of all texts written in these two principal languages of the Inca empire. Its pursuit of perfection, as against the exercise of critical selectivity, marks the passionate collector. Though many entries may be more or less devoid of merit, nothing is left out; discriminations are limited to brief end notes to warn future researchers away from items the authors consider worthless. "Taking the bad with the good," John Howland Rowe pointed out some years ago, "the bibliography of South American linguistics is at least as abundant as that for North America. The South American literature is harder to use, however," he adds, "because it is widely scattered in obscure journals and published in eight different languages. It is often a major research problem to find out what has been written about a language or a family in which one is interested."[1] This obstacle is surely removed now for Aymara and Quechua; for the rarer books and pamphlets, the authors provide even a listing of the public or private libraries which possess them. They know where to direct their fellow-scholars, for they themselves have examined the holdings of about two hundred libraries, in twenty countries; they designate items handled in contrast to those not actually seen.

Rivet evidently shares the view of most scholars concerning the quality of descriptive work relating to the native languages of South America, and he draws the same consequences as regards the chaotic pursuit of classification. Mason's remark, that "good scientific grammars of South American languages are practically non-existent,"[2] augumented by Hoijer's "as indeed, are phonemic studies, collections of texts, and dictionaries,"[3] is echoed by Rivet's regretful comment that "que certains savants considèrent comme acquise, est contestée par d'autres savants d'égale valeur" (xviii). These controversies—which Rivet deems inconceivable in other fields of comparative linguistics, even African—he ascribes to the fact that most of those who occupy themselves with South American languages do so only as a side-line and often without the requisite scientific training. Professional linguists, he says, lack interest in historical research as regards New World—particularly South American—languages because of the paucity of data; the area does not provide sufficient groundwork for profound investigations of a comparative nature. However, while he considers this true in general, he does not apply his observation to Aymara and Quechua. The ultimate purpose of this huge bibliography, indeed, is to prove precisely the contrary: that we do possess adequate data for a comparative grammer, not only internally, for the dialects of Aymara,

[1] John Howland Rowe, "Linguistic Classification Problems in South America," UCPL 10.14 (1954).

[2] J. Alden Mason, "The Languages of South American Indians," BAE Bulletin 143:6.161 (1950).

[3] Harry Hoijer, "Some Problems of American Indian Linguistic Research," UCPL 10.3-4 (1954).

or for Quechuan, but as between the two principal groups themselves.

This bibliography may or may not provide the necessary references on the basis of which one can resolve the question of the genetic relationship of these two languages. Rivet himself abstains from making any assertions; he avoids the temptation to interpret structural similarities as evidence of a common origin—a lure which not a few of his predecessors and colleagues have failed to resist. Already in 1888, Steinthal concluded that Aymara and Quechua were genetically related and that their mutual exchange of loans was secondary.[4] This short paper is cited with approval by Swadesh, who calls it "cogent," and then goes on to specify, by lexicostatistic count, that the two branched about thirty-seven centuries ago.[5] In the 1940's, Jijón y Caamaño took a similar stand, mainly on the dubious ground that "su estructura gramatical es fundamentalmente la misma."[6] Mason seems persuaded by this argument, also calling it "cogent," and postulates a new Kechumaran subphylum (perhaps, even more remotely, belonging to a vast Hokan-Siouan phylum), stating: "Phonetics and morphology show a relatively common pattern and many close similarities, but the lexical roots seem to have little in common except a large number, possibly as much as a quarter of the whole, obviously related and probably borrowed by one or the other language."[7] Most recently, however, McQuown emphasizes that the evidence in question indicates only that borrowing has taken place, no more; and rightly generalizes that "arguments from morphology alone, unsupported by a substantial corpus of lexical material in which regular sound correspondences from language to language are demonstrated, can never be conclusive . . ."[8] Thus Hoijer's pithy dictum of 1946 still stands: "Aymaran is said by some who have worked on it to be related to Kechua. No evidence of this has been published, however."[9]

A very substantial proportion of the Aymara and Quechua material referred to is religious in character, which is to say not only that the bulk of the sample represents poetic ('marked') language as against what, for want of a better term, we may call conversational ('unmarked') language; but also that most of it is translated from—or stimulated by—Spanish rather than spontaneously native. Rivet appears aware of this limitation, though he responds with a strangely unsatisfying analogy: Indo-European specialists have not hestiated, he points out, to initiate their studies of Old Church Slavic by perusing the hieratic texts translated by Cyril and Methodius! Yet, since Aymara and Quechua are spoken by a combined population in excess of six million, extensive and intensive field work with the living languages, in all their dialectal variety, would seem to be the compelling first task. Scanning the records of the past to view the modern data in historical perspective would follow in due course. Linguistics should be the natural mother of philology.

In the four and a half centuries documented by texts, Rivet emphasizes, Aymara and Quechua have changed remarkably little. To prove this, he juxtaposes versions of the Lord's Prayer from 1598 and from the twentieth century, in both languages. Again, anticipating the obvious objection

[4] Heymann Steinthal, "Das Verhältniss, das zwischen dem Ketschua und Aymará besteht," Proceedings of the Seventh International Congress of Americanists, 1888, pp. 462–64 (Berlin, 1890).

[5] Morris Swadesh, "Perspectives and Problems of Amerindian Comparative Linguistics," Word 10.329 (1954).

[6] Jacinto Jijón y Caamaño, "Las lenguas del sur de Centro América y el Norte y centro del oeste de Sud-América," El Ecuador Interandino y Occidental 3.605 (1943).

[7] Mason, loc. cit. 196–97.

[8] Norman A. McQuown, "The Indigenous Languages of Latin America," AA 57.561 (1955). It was partially with this in view that our own "Materials for an Aymara Dictionary," JSA 40.89–151 (1951), were compiled.

[9] Harry Hoijer, "Introduction," VFPA 6.27 (1946).

that changes in the spoken form of a language usually proceed at a much more rapid rate than in a form highly charged with prestige and, in consequence, standardized, he simply concedes that no other kinds of texts are available for comparison. However, he then goes on to generalize that stability is a characteristic of New World languages, and that this observation is borne out whenever historical documents are available for comparison with contemporary records. But if Indian languages, in their spoken form, were truly slower to change than those of other continents, under similar conditions, the unique linguistic diversity of the Americas could hardly be explained, unless one assumes that the separations occurred in far greater antiquity than is usually supposed.[10]

In the review cited above, we described the overall organization of this bibliography as chronological, with the entries alphabetized (by author, or, if anonymous, by title) annually. Far from just a simple list, the entries are interrelated by a complex network of cross-references which are controlled by five indexes, to be found in the last volume. They are: (1) an index of personal names, including both patronyms and pseudonyms, and of religious orders and missions (815–56); (2) an index of periodicals and other serials, *Festschriften*, and the like, with, incidentally, seven references to IJAL (Garro, Trager, Rowe, and Reyburn on Quechua, Tschopik and LaBarre on Aymara, and Read on both) and two to Lg. (Yokoyama and Wonderly on Quechua) (857–69); (3) an index of place names, tribal designations, and the like (871–84); (4) a particularly valuable index of languages and dialects (885–904); and (5) a topical index full of intriguing entries, ranging from a study about the ancient Peruvian Abacus to Zumbayllu (El), which turns out to be an unpublished fragment from a Quechua novel entitled, *The Deep Rivers* (905–46).

There are approximately 4300 entries in all. For not a few, the interior title page is reproduced facsimile, usually in full size. The many intricate typographic problems which must have faced the printer were solved with truly distinguished craftsmanship; the work is handsome and, especially in view of its size and technical difficulty, almost flawless in execution.

This bibliography may stand at once as a milestone and as a model. It may mark the end of an era in one field of South American linguistics, for it points up, at least by implication, the gaps which could so readily be filled with a shift of emphasis from second-hand sources to the vast reservoir of informants; and it may also be the first of a series of really comprehensive and serviceable bibliographies—indispensable research tools for linguists as well as folklorists, ethnohistorians, and many other scholars with specialization in the native Americas—the need for which, as Hoijer has stressed, "increases as the number of students and publications increases."[11]

INDIANA UNIVERSITY

THE NORWEGIAN LANGUAGE IN AMERICA: A STUDY IN BILINGUAL BEHAVIOR, 2 vols. By Einar Haugen. Philadelphia: University of Pennsylvania Press, 1953. Pp. xiv + 695.

FOSTER W. BLAISDELL, JR.

This is a rather late review of a very important book, but the lateness is due to circumstances and not to any failure to perceive the high merit of the work. The field, bilingualism and the American-Norwegian language, is one in which the author is already an authority, or THE authority. Indeed, the quality of the work is such that a review of it may still be considered timely.

While theorizing and debate are a neces-

[10] Remarkably little is actually known about the rate of linguistic change in general; even in lexicostatistics (to say nothing of phonemic or grammatical change), "empirical evidence that the rate of loss [of vocabulary items in the basic core of relatively stable vocabulary] is constant through time" is lacking. Cf. Sarah C. Gudschinsky, "The ABC's of Lexicostatistics (Glottochronology)," Word 12.177 (1956), summarizing Lees.

[11] Hoijer, UCPL 10.4–5.

sary prerequisite to the advancement of knowledge at certain stages, practical application is ultimately the 'proof of the pudding.' Einar Haugen's work, material-centered as it is, presents an excellent example of practical application. However, while theory is not the main consideration of the work, it may be found liberally interspersed throughout, although there is little attempt at polemic. If the general approach is at times somewhat conservative, the results are only the more sound, and even a structural linguist interested in the most advanced techniques can find a wealth of material for speculation, whether or not he agrees in every detail.

The work under consideration will prove of interest not only to the linguist, but also to the anthropologist, and obviously to the general Scandinavian specialist. At every point the author considers the linguistic material in its socio-cultural setting and attempts to assess the forces which this setting has exerted upon the material. He realizes that this course leads to difficulties, and that conclusions are sometimes only very tentative at best. But that any other procedure would be either impossible or far less fruitful, becomes very obvious.

The work falls into two parts, represented by the two volumes. Volume I (Chapters 1–11) is entitled "The Bilingual Community," and, after a brief general introduction on bilingualism, deals with the background and history of the Norwegian immigration to America and the fate of the dialects in the new country. For the study of a bilingual situation this is a case-book which overlooks few, if any, of the possible sources of material. The various areas in which the immigrant felt the pressure of new contact situations—the economic, official, social, and educational—are each considered and evaluated. To these forces are juxtaposed those of native tradition and culture exerted by continued contact with the homeland. Interesting is the discussion of the complications arising from sharp linguistic conflicts in Norway. The first part ends with a description of the inevitable, though not yet complete, triumph of English.

Volume II (Chapters 12–20) is entitled "The American Dialects of Norwegian." Already in the preceding volume (p. 72) the author points out that although American-Norwegian might be termed a 'bilingual dialect,' it is still Norwegian. This volume will perhaps be of greatest interest to the linguist. The methods employed for collecting the material are described in some detail (a sample questionnaire is included in an appendix). The borrowing process is considered, and then an analysis of the phonology and grammar of the loanwords is given. The author concludes with an analysis and classification of various types of loanwords. There follow a rather extensive selection of specimen texts (approximately seventy pages) and a selected vocabulary of English loanwords (some three hundred items).

In a work of such scope each reader will find certain parts of greater interest than others, and each specialist will find points upon which he disagrees. It would be of little value to go into any aspect of the work in detail. A reviewer can simply comment on a few general points. Of interest to this reviewer was the material on the grammatical classes of words borrowed (as in Chapters 5, 6, and 15) and the comparison with other languages in the United States and Canada (as in Chapters 11 and 15). The author occasionally throws in brief comments relating his material to historical situations (as on pages 371 and 408). As more such thorough studies are made of present-day bilingual situations for languages of widely differing types, our knowledge of this whole field will increase greatly. It should then be possible to determine more clearly and exactly than heretofore what general laws may be established (e.g. pages 380–81)—and which may not (see, for example, the comments on the concept of 'mixture,' pages 362–63). When this is accomplished historical linguistics will not be the last to benefit. Very possibly we will have a better understanding

of what occurred in the Germanic world, for instance, and new light may be shed on other historical problems where today we can no longer control the situation as closely as is possible in the work under review.

With as much material as is presented, it might seem impertinent to ask for any more. The structuralist, however, may miss a consideration of the effect of the system of English upon those of the Norwegian dialects. It is quite obvious from the book that more than just vocabulary has been affected. The phonemic systems of the dialects have certainly been altered, as is clear from the discussions on pages 394 and 437–38. The dialects already differ slightly among themselves, and it would be extremely interesting to see the exact impact of English phonemic structure on each of the various dialects. Even if it were ONLY a matter of introducing new consonant clusters, the results would be significant. As the author points out (page 410), loanwords are an integral part of the structure of the borrowing language and may not with impunity be 'skimmed off' and disregarded in analysis. Further study of this aspect seems profitable.

Misprints are few, especially considering the size of the work, and those noted were not too disturbing (as page 123, line 13, *vere* for *were*, or page 303, line 6, *Unfortuately* for *Unfortunately* and *en* for *an*). Some readers may be slightly irritated by the grouping of the footnotes at the end of each volume, but there are, of course, obvious technical advantages to this procedure.

Having finished reading this work, the reader will probably pause to reflect upon the immense amount of time and effort which it represents. Let him also reflect upon the value. It is to be hoped that potential specialists will not be discouraged but only stimulated.

INDIANA UNIVERSITY

GUAYMI GRAMMAR AND DICTIONARY: WITH SOME ETHNOLOGICAL NOTES (Smithsonian Institution Bureau of American Ethnology Bulletin 162). By Ephraim S. Alphonse. Washington: U. S. Government Printing Office, 1956. Pp. ix + 128.

PAUL L. KIRK

Prior to Ephraim S. Alphonse's present work, material on the Guaymí languages was published by Thomas and Swanton, J. Alden Mason, Lucien Adam, and Rivet. However, all of these studies appear to be based on the vocabularies of A. L. Pinart who visited the Cricamola River region in 1883. The work of Pinart draws largely from a manuscript vocabulary by Padre Blas José Franco which was published by Pinart in 1882.

This present study would appear to be more valuable than the previous fragmentary works because the author Ephraim S. Alphonse has spent twenty-one years living among the Valiente Indians of Central America. Nevertheless, Alphonse's study is seriously vitiated because of his own lack of linguistic and ethnological orientation. Alphonse's work is organized under three main sections: a grammar of some sixty-one pages; a Guaymí-English Spanish dictionary containing about two thousand entries; and ethnological notes of about eight pages.

One half of a page is used to describe the Guaymí 'alphabet'; the sounds are correlated when possible with the closest Spanish equivalent. When it is impossible to correlate the Guaymí sounds with Spanish equivalents Alphonse uses a descriptive phrase. This does not help to clarify the phonemic status of the sound, nor is it always possible to determine its exact nature. For example, three types of o are distinguished: "*o*—as *o* in Spanish"; "*ŏ*—as a deep gutteral *ŏ*"; "*ó*—as *o* in English". Two types of u are distinguished: "*u*—as *u* in Spanish"; "*ü*—as *u* in French". The descriptive linguits may well puzzle for quite some time in an attempt to determine whether or not the 'alphabet' has been phonemicized in any way. Alphonse gives no clues; there is no discussion of phonemic analysis based upon phonetic transcription. Also there is a significant absence of any discussion of prosodic

phenomena. What kinds of stress occur in Guaymí? What pitch phenomena are present? These questions remain unanswered.

The grammar section although covering a number of pages is not much more rewarding as a description of the structure of Guaymí than the brief phonological notes. Eight principal parts of speech are described: nouns, pronouns, adjectives, verbs, adverbs, prepositions, conjunctions, interjections. It appears that these classes and the subclasses have been established upon semantical criteria and the whim of the analyst rather than upon structural features. Nouns are divided into three subclasses of (1) names of things; (2) names of persons; (3) names of places. A pronoun is defined as "a word used instead of a noun" (p. 2). The rest of the parts of speech bear similar semantic definitions.

There is definite structural criteria that could have been used for determining classes of nouns as is evidenced by suffixation for plural and the class of numerals used with a particular noun class (See p. 13). Failure to observe structural criteria has resulted in the establishment of a third person pronoun that in all probability belongs to one of the noun classes since it occurs with the pluralization suffix -tre (p. 4).

The verb tables on pages thirty-one to thirty-five will be useful to the analyst interested in restating Guaymí grammar. Some of the complexities will prove baffling to the analyst because of the previous lack of phonemic description. Also there appears to be some inconsistency of recording of data here as compared with other sections of the grammar. Nevertheless, the linguist will find a restatement of the verbs intriguing.

Three short texts which Alphonse has labeled as narrative, didactic, and hortatory are included at the conclusion of the grammar section. These texts would be better classified under the categories of translation texts and spontaneous texts since two of the texts given are translations of Biblical texts.

The ethnographical notes discuss Guaymí dreams, puberty, marriage, and death rites, medicine practices, taboos, and dances. These notes are helpful in gaining a cursory insight into Guaymí culture.

Items appearing in the grammar such as a list of 'don'ts' and rules for capitalization give the impression that a pedagogical grammar was the intent of the author. Although this grammar has been poured into a Procrustean bed of Latin grammar and semantic categories, the verb table will be useful for restatements and the dictionary will be welcomed by the comparativist until a substantial descriptive work on Guaymí appears.

SUMMER INSTITUTE OF LINGUISTICS

DRUMMERS AND DREAMERS. By Click Relander. Caldwell, 1956. $6.00

C. F. VOEGELIN

Most anthropologists working with any of the Northern Sahaptin bands (Warm Spring or Tenino, Walla Walla, Umatilla, Palus, Skin, Yakima, Pswanwapam, Wanapum, Klikitat, Upper Cowlitz, Upper Nisqually), have met and appreciated the city editor of the *Yakima Daily Republic*, the artist whose sculpturing of his Indian friends portrays personality as well as physical type, whose book (here briefly reviewed) shows what can be done when the ethnohistorical approach is combined with a field technique derivative of both newspaper interviewing and the warm rapport of confidential sources. The fountainhead of all sources in the book is "Smowhala . . . mind of a genius, the tenderness of an artist, and an inborn sense of leadership." (p. 60). Though the author appears to share these heroic qualities, his actual informants ('narrators'), numbering 24 (p. 320), do not; they are humble citizens, most of them of the Wanapum band, and they speak to us of the Prophet Smowhala and his successors through the mouth of Click Relander, but not directly. One use to which *Drummers and Dreamers* might be put would be that of an eliciting want list for obtaining texts from Sahaptin informants in

Sahaptin. This would add a new dimension in a complex acculturational picture; and fortunately it is not too late to obtain such texts.

INDIANA UNIVERSITY

READINGS IN LINGUISTICS. The development of descriptive linguistics in America since 1925. Edited for the Committee on the Language Program by Martin Joos. Washington: American Council of Learned Societies, 1957.

C. F. VOEGELIN

The general dissatisfaction expressed over the selection of papers for this book is reflected in the many alternate titles proposed for it; of these, three epitomize my own understanding of the basis for the selection: (1) The Blue Book of Linguistic Etiquette, (2) Neo-Bloomfieldian Linguistics, (3) The Development of Restatement Linguistics in America since 1925. Whatever understanding I have about the basis for selection is concerned only with the papers numbered 9 to 14, 16 to 23, 25, 32, 33, 36, 40 to 43, inclusive. I do not understand why this majority group of papers should appear in the same volume with the minority group of papers (1 to 8, 15, 24, 26 to 31, 34, 35, 37 to 39) which are devoted either to history or to theory or to both: procedure and discussion unrelated to re-analysis or unconvinced of the possibility of final linguistic analysis, as, for example, Chao's much cited paper on non-uniqueness of phonemic solutions.

More than half of the papers aim *toward a final linguistic analysis*—in one sense or another, as in a concern with the whole or part of the phonology of Spanish (43, 42, 41, 40), Korean (36), Japanese (33), Chinese (32, 21, 13), German (20, 19), English (10), Tübatulabal (9). These papers, as well as those exemplified by more than one language in their concern with phonemics and morphophonemics (14, 12, 11), and as well as the half dozen papers which begin with the morpheme—in Hebrew (25), in English (23, 18, 16), in Japanese (17), in general (22)—have two things in common, both relating to their orientation toward a final linguistic analysis. For one thing, the papers listed here restate already analyzed linguistic systems from widely known languages, as Spanish or English or German or Japanese; or from more narrowly known languages, as Tübatulabal, where however, a preliminary analysis of the linguistic system has been stated, so that the paper in question (9) is just as much a restatement of a known linguistic system as is the paper devoted to English verbs (23). Secondly, the papers listed here make almost constant cross-reference to each other, thus assuring that their individual deviations will be transformable from one kind of final linguistic analysis to another kind, and thereby remaining—all in all—within the range of the neo-Bloomfieldian reference. When several of the papers listed here refer to a particular published paper which is, however, not included in the *Readings*, the excluded paper presumably lies beyond the range—or the pale—of the neo-Bloomfieldian reference as represented by the majority of the papers selected for the *Readings*.

It would be possible to list an impressively high number of interests in linguistics which lie outside of the selection range of the *Readings*. (Some interests seem to be avoided as un-American.) The selection of the majority of papers, as already indicated, seems confined to exemplars of the aim *toward a final linguistic analysis* (b), without ever bothering about (a), *techniques for a preliminary analysis*, despite the fact that (a) is prerequisite to (b). However, since every (b) is preceded by an application of (a), it might be argued that every (b) is a restatement of results obtained from (a). The minimum of descriptive linguistics is surely a consideration of both (a) and (b). (The neglect of (a) in favor of an exclusive concern with (b) seems to reflect an unacknowledged stimulus diffusion from European scholarship.)

INDIANA UNIVERSITY

INDIANA UNIVERSITY PUBLICATIONS IN ANTHROPOLOGY AND LINGUISTICS

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8. Claude Levi-Strauss, Roman Jakobson, C. F. Voegelin and Thomas A. Sebeok, Results of the Conference of Anthropologists and Linguists (86 pp., 1953) $1.00
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11. Charles F. Hockett, A Manual of Phonology (246 pp., 1955) $3.50
12. Harold E. Driver, An Integration of Functional, Evolutionary, and Historical Theory by Means of Correlations; Bjarne Ulvestad, An Approach to Describing Usage of Variants in Language (59 pp., 1956) $1.50
13. Eric H. Lenneberg and John M. Roberts, The Language of Experience (33 pp., 1956) $1.00
14. Charles F. Voegelin and Florence M. Voegelin, Hopi Domains. A Lexical Approach to the Problem of Selection (82 pp. 1957) $2.00

PUBLICATIONS OF THE RESEARCH CENTER IN ANTHROPOLOGY, FOLKLORE, AND LINGUISTICS

1. Edward Sapir and Morris Swadesh, Native Accounts of Nootka Ethnography (457 pp., 1955) $5.00
2. Eeva K. Minn, Studies in Cheremis, Volume 4, Derivation (viii + 99 pp., 1956) $2.00
3. Robert N. Pehrson, The Bilateral Network of Social Relations in Konkama Lapp District (xiv + 128 pp., 1957) $2.50
4. Leonard Newmark, Structural Grammar of Albanian (130 pp., 1957) $2.50
5. Robert E. Longacre, Proto-Mixtecan (195 pp., 1957) $3.50

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